

Code of Practice on

SAFETY MANAGEMENT



CODE OF PRACTICE

On

Safety Management



Occupational Safety and Health Branch
Labour Department

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Occupational Safety and Health Branch
Labour Department

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1. INTRODUCTION

In 1995, the Government conducted a comprehensive review of industrial safety with a view to mapping out Hong Kong's long-term safety strategies. The Review concluded that for Hong Kong to achieve high standards of safety and health at work, enterprises must embrace self-regulation and safety management. The Review recommended that the Government should provide a framework within which self-regulation was to be achieved through a company system of safety management.

Against this background, the Government has introduced a safety management system consisting of 14 elements. It has promoted the system through launching pilot schemes, publishing an Occupational Safety Charter, organising seminars and promotional visits, and issuing a Guide to Safety Management.

This system is now enshrined in the Factories and Industrial Undertakings (Safety Management) Regulation [hereinafter called "the Safety Management Regulation"] passed on 24 November 1999.

Under the Safety Management Regulation, proprietors or contractors of certain industrial undertakings are required to develop, implement and maintain in respect of the undertakings a safety management system which contains a number of key process elements. They are also required to have the system regularly audited or reviewed.

This Code of Practice on Safety Management [hereinafter called the COP] is a Code of Practice issued by the Commissioner for Labour under section 7A(1) of the Factories and Industrial Undertakings Ordinance (Cap. 59). It aims to provide practical guidance for proprietors and contractors of relevant industrial undertakings to comply with the aforesaid legal requirements. It sets out, in Part 4, how proprietors or contractors should develop, implement and maintain a safety management system. It provides, in Part 5, practical guidance in respect of the 14 elements of a safety management system. It also provides, in Part 6 and Part 7, practical guidance on safety audits and safety reviews.

First and foremost, however, proprietors and contractors should refer to Part 3 of this COP for practical guidance on their level and scope of responsibilities under the Safety Management Regulation in relation to their industrial undertakings' size of employment and the value of work undertaken.

This COP has a special legal status. Although failure to observe any guidance given in this COP is not in itself an offence, that failure may be taken by a court in criminal proceedings as a relevant factor in determining whether or not a person has breached any of the provisions of the Safety Management Regulation to which the guidance relates.

The statutory provisions referred to or quoted in this COP are those in force on 1 April 2002.

2. INTERPRETATION

In this COP, unless the context otherwise requires -

"construction site" (建築地盤) means a place where construction work is undertaken and also any area in the immediate vicinity of any such place which is used for the storage of materials or plant used or intended to be used for the purpose of the construction work;

"copy" (文本), in relation to any document, includes the original of the document;

"designated undertaking" (指定經營) means an industrial undertaking involving any of the following activities -

- (a) the generation, transformation and transmission of electricity;
- (b) the generation and transmission of town gas, or liquefied petroleum gas, within the meaning of section 2 of the Gas Safety Ordinance (Cap. 51); or
- (c) container handling;

"hazard"* (危險) means a source or a situation with a potential for harm in terms of human injury or ill-health, damage to property, damage to the environment, or a combination of these;

"ill-health"* (健康受損) means ill-health that is judged to have been caused by or made worse by a person's work activity or work environment;

"incident"* (事故) means an unplanned event which has the potential to lead to accident;

"registered" (註冊) means registered under section 6(1) of the Safety Management Regulation as a safety auditor or scheme operator;

"registered safety auditor" (註冊安全審核員) means a person registered as a safety auditor;

"registered scheme operator" (註冊計劃營辦人) means a person registered as a scheme operator;

"relevant industrial undertaking" (有關工業經營), in relation to a proprietor or contractor specified in Schedule 3 of the Safety Management Regulation, means the industrial undertaking specified in that Schedule (and howsoever worded) in connection with the proprietor or contractor, as the case may be;

"risk"* (風險、危害) means the combination of the likelihood and consequence of a specified hazardous event occurring;

"risk assessment"* (風險評估) means the overall process of estimating the magnitude of risk and deciding whether or not the risk is tolerable. It also includes the process of recognizing that a hazard exists and defining its characteristics;

"risk control"* (風險控制) means the overall process of developing, implementing and maintaining the safety procedures and risk control measures. It also includes the review of the safety procedures and risk control measures;

"safety audit" (安全審核) means an arrangement for -

- (a) collecting, assessing and verifying information on the efficiency, effectiveness and reliability of a safety management system (including the elements specified in Schedule 4 of the Safety Management Regulation contained in the system); and
- (b) considering improvements to the system;

"safety audit report" (安全審核報告) means a report compiled by a registered safety auditor after the completion of a safety audit;

"safety auditor" (安全審核員) means a person who conducts or proposes to conduct safety audits;

"safety committee" (安全委員會) means a safety committee established under section 10 of the Safety Management Regulation;

"safety management" (安全管理) means the management functions connected with the carrying on of an industrial undertaking that relate to the safety of personnel in the undertaking, including -

- (a) the planning, developing, organizing and implementing of a safety policy; and
- (b) the measuring, auditing or reviewing of the performance of those functions;

"safety management system" (安全管理制度) means a system which provides safety management in an industrial undertaking;

"safety plan" *(安全計劃) means a plan for carrying out a safety policy;

"safety review" (安全查核) means an arrangement for -

- (a) reviewing the effectiveness of a safety management system (including the elements specified in Schedule 4 of the Safety Management Regulation contained in the system); and
- (b) considering improvements to the effectiveness of the system;

"safety review officer" (安全查核員) means a person who is appointed to conduct a safety review under section 19(1) (a) of the Safety Management Regulation;

"safety review report" (安全查核報告) means a report compiled by a safety review officer after the completion of a safety review;

"scheme" (計劃) means a scheme to train persons to be safety auditors;

"scheme operator" (計劃營辦人) means a person who operates or proposes to operate a scheme;

"shipyard" (船廠) means any yard or dry dock (including the precincts thereof) in which ships or vessels, except ships or vessels afloat, are constructed, reconstructed, maintained, repaired, refitted, finished or broken up.

Note : The above terms, except those marked with "*", are given the meanings as stipulated under section 2 of the Safety Management Regulation.

3. RESPONSIBILITIES OF PROPRIETORS AND CONTRACTORS

Under the Safety Management Regulation, a proprietor or contractor specified in Schedule 3 is required to develop, implement and maintain in respect of the relevant industrial undertaking a safety management system, consisting of some or all of the elements stipulated in Schedule 4.

Schedule 3 is divided into 4 parts (with each part containing one group of proprietors or contractors) as follows :

PART 1

1. A contractor in relation to construction work having an aggregate of 100 or more workers in a day working in a single construction site.
2. A contractor in relation to construction work with a contract value of \$100 million or more.
3. A proprietor of a shipyard business having an aggregate of 100 or more workers in a day working in a single shipyard.
4. A proprietor of a factory having an aggregate of 100 or more workers in a day working in a single factory.
5. A proprietor of a designated undertaking having an aggregate of 100 or more workers in a day working in a single workplace.

PART 2

1. A contractor in relation to construction work having an aggregate of 50 or more but less than 100 workers in a day working in a single construction site.
2. A proprietor of a shipyard business having an aggregate of 50 or more but less than 100 workers in a day working in a single shipyard.
3. A proprietor of a factory having an aggregate of 50 or more but less than 100 workers in a day working in a single factory.
4. A proprietor of a designated undertaking having an aggregate of 50 or more but less than 100 workers in a day working in a single workplace.

PART 3

1. A contractor in relation to construction work having an aggregate of 100 or more workers in a day working in 2 or more construction sites.
2. A proprietor of a shipyard business having an aggregate of 100 or more workers in a day working in 2 or more shipyards.
3. A proprietor of a factory having an aggregate of 100 or more workers in a day working in 2 or more factories.
4. A proprietor of a designated undertaking involving any one or more of the activities specified in paragraph (a) of the definition of “designated undertaking” in section 2(1) of this Regulation, having an aggregate of 100 or more workers in a day working in 2 or more workplaces.
5. A proprietor of a designated undertaking involving any one or more of the activities specified in paragraph (b) of the definition of “designated undertaking” in section 2(1) of this Regulation, having an aggregate of 100 or more workers in a day working in 2 or more workplaces.
6. A proprietor of a designated undertaking involving any one or more of the activities specified in paragraph (c) of the definition of “designated undertaking” in section 2(1) of this Regulation, having an aggregate of 100 or more workers in a day working in 2 or more workplaces.

PART 4

1. A contractor in relation to construction work having an aggregate of 50 or more but less than 100 workers in a day working in 2 or more construction sites.
2. A proprietor of a shipyard business having an aggregate of 50 or more but less than 100 workers in a day working in 2 or more shipyards.
3. A proprietor of a factory having an aggregate of 50 or more but less than 100 workers in a day working in 2 or more factories.
4. A proprietor of a designated undertaking involving any one or more of the activities specified in paragraph (a) of the definition of “designated undertaking” in section 2(1) of this Regulation, having an aggregate of 50 or more but less than 100 workers in a day working in 2 or more workplaces.
5. A proprietor of a designated undertaking involving any one or more of the activities specified in paragraph (b) of the definition of “designated undertaking” in section 2(1) of this Regulation, having an aggregate of 50 or more but less than 100 workers in a day working in 2 or more workplaces.
6. A proprietor of a designated undertaking involving any one or more of the activities specified in paragraph (c) of the definition of “designated undertaking” in section 2(1) of this Regulation, having an aggregate of 50 or more but less than 100 workers in a day working in 2 or more workplaces.

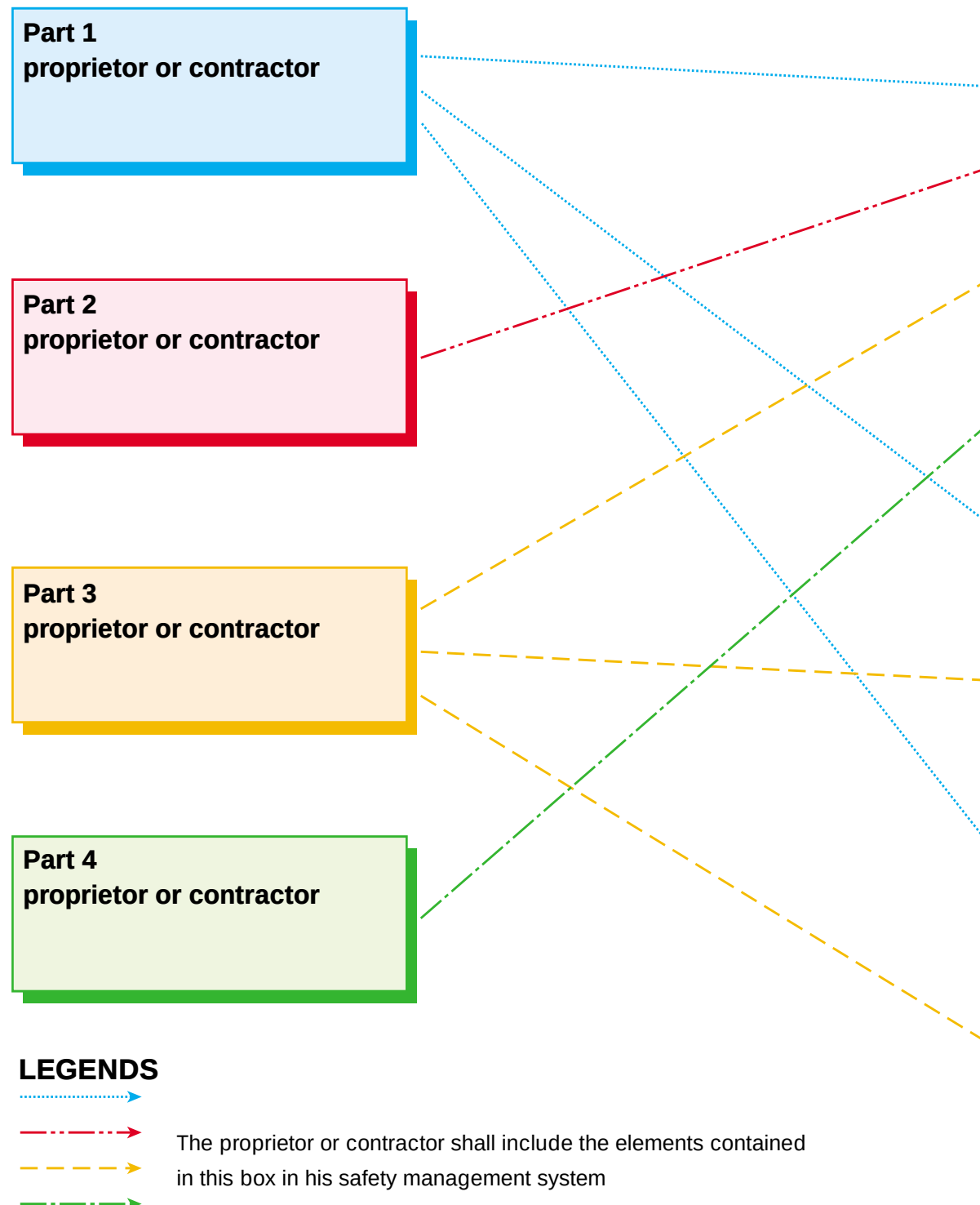
A proprietor or contractor specified in Part 1 or Part 3 of Schedule 3 is required by the Safety Management Regulation to develop, implement and maintain in respect of the relevant industrial undertaking a safety management system which contains the **10 elements** as stipulated in Parts 1 and 2 of Schedule 4. *[Sections 8(1) and 8(3) of the Safety Management Regulation]*

A proprietor or contractor specified in Part 2 or Part 4 of Schedule 3 is required by the Safety Management Regulation to develop, implement and maintain in respect of the relevant industrial undertaking a safety management system which contains the **8 elements** listed in Part 1 of Schedule 4. *[Sections 8(2) and 8(4) of the Safety Management Regulation]*

Note:

The implementation of the Safety Management Regulation will be reviewed one year after the Regulation has come into force to decide on the appropriate time to bring the remaining 4 elements listed in Part 3 of Schedule 4 into operation.

THE SITUATION CAN BE GRAPHICALLY ILLUSTRATED BY THE FOLLOWING DIAGRAM:



Safety policy

1. A safety policy which states the commitment of the proprietor or contractor to safety and health at work.

Organisational structure

2. A structure to assure implementation of the commitment to safety and health at work.

Safety training

3. Training to equip personnel with knowledge to work safely and without risk to health.

In-house safety rules

4. In-house safety rules to provide instruction for achieving safety management objectives.

Inspection programme

5. A programme of inspection to identify hazardous conditions and for the rectification of any such conditions at regular intervals or as appropriate.

Hazard control programme

6. A programme to identify hazardous exposure or the risk of such exposure to the workers and to provide suitable personal protective equipment as a last resort where engineering control methods are not feasible.

Accident/incident investigation

7. Investigation of accidents or incidents to find out the cause of any accident or incident and to develop prompt arrangements to prevent recurrence.

Emergency preparedness

8. Emergency preparedness to develop, communicate and execute plans prescribing the effective management of emergency situations.

Evaluation, selection and control of sub-contractors

1. Evaluation, selection and control of sub-contractors to ensure that sub-contractors are fully aware of their safety obligations and are in fact meeting them.

Safety committees

2. Safety committees to identify, recommend and keep under review measures to improve the safety and health at work.

Job-hazard analysis

1. Evaluation of job related hazards or potential hazards and development of safety procedures.

Safety and health awareness

2. Promotion, development and maintenance of safety and health awareness in a workplace.

Accident control and hazard elimination

3. A programme for accident control and elimination of hazards before exposing workers to any adverse work environment.

Occupational health assurance programme

4. A programme to protect workers from occupational health hazards.

N.B. see note at Page 13

Other related responsibilities

In addition to the duties to develop, implement and maintain a safety management system under the Safety Management Regulation, a proprietor or contractor specified in Part 1 or Part 3 of Schedule 3 is also required to discharge his duties under -

- (a) section 9 in relation to a safety policy¹;
- (b) sections 10 to 12 in relation to safety committees²; and
- (c) sections 13, 14, 16(1) and 17 in relation to safety audits³.

In addition to the duties to develop, implement and maintain a safety management system under the Safety Management Regulation, a proprietor or contractor specified in Part 2 or Part 4 of Schedule 3 is also required to discharge his duties under -

- (a) section 9 in relation to a safety policy¹; and
- (b) sections 19, 20, 22(1), 23 and 24(2) in relation to safety reviews⁴.

Responsibilities of the proprietors, contractors and sub-contractors in a big project

The approach adopted in the Safety Management Regulation is capable of creating different layers of safety management systems to be implemented in a big enterprise or project. Therefore, a proprietor or contractor of, for example, a construction firm which operates construction sites at different locations is required to develop, implement and maintain a safety management system both at the enterprise level and at the workplace level within its undertakings or construction sites, as long as the proprietor or contractor falls within Schedule 3 of the Safety Management Regulation.

To illustrate this with a further example, let us use the case of a joint venture, consisting of several contracting firms, and engaged in a big construction project. The joint venture should implement its safety management system and

¹ Refer to Part 5.1 of the COP concerning safety policy.

² Refer to Part 5.10 of the COP concerning safety committee.

³ Refer to Part 6 of the COP concerning safety audit.

⁴ Refer to Part 7 of the COP concerning safety review.

run a safety committee by itself with members from the contracting firms involved. At the same time, these individual contracting firms, depending on size, should also have their own safety management systems and safety committees organised in respect of the various sites of the project. Also, depending on size, in each of the respective parent companies of these contracting firms, there should be an overall safety management system and a safety committee for overseeing the sites under its control.

It should be noted that sub-contractors are also required to set up their own safety management systems if they belong to one of the groups of proprietors or contractors as specified in Schedule 3.

Anyway, it should be noted that compliance with subsection (1), (2), (3) or (4) of section 8 by a proprietor or contractor in respect of a relevant industrial undertaking specified in part 1, 2, 3 or 4 of Schedule 3 shall not be treated as compliance with that subsection, or another subsection of that section, by the proprietor or contractor, as the case may be, in respect of any other relevant industrial undertaking specified in the same Part, or another Part, of that Schedule. *[Section 2(3) of the Safety Management Regulation]*

4. DEVELOPING, IMPLEMENTING AND MAINTAINING A SAFETY MANAGEMENT SYSTEM

A proprietor or contractor of a relevant industrial undertaking shall **develop, implement** and **maintain** in respect of the relevant industrial undertaking a safety management system which contains the elements applicable to that undertaking. *[Section 8 of the Safety Management Regulation].*

4.1 How to develop a safety management system ?

The **development** of a safety management system involves **planning** and **developing**.

4.1.1 Planning

Planning is the process of determining in advance what should be accomplished. The planning stage answers the questions: "Where are we now?" and "Where do we want to be?".

- (1) At this stage, the proprietor or contractor of a relevant industrial undertaking is required:
 - (a) to identify in advance what safety and health objectives should be accomplished by a safety management system as appropriate to the relevant industrial undertaking under the Safety Management Regulation;
 - (b) to prioritise the safety and health objectives and devise the ways and means to achieve them; and
 - (c) to estimate the financial and other resource implications arising from the accomplishment of these safety and health objectives.
- (2) For the purposes of 4.1.1(1) above, the proprietor or contractor should:
 - (a) conduct an initial status analysis to take stock of the existing arrangements for managing safety and health;
 - (b) carry out risk assessments to decide on priorities and objectives for hazard elimination and risk control;
 - (c) establish performance standards for monitoring performance; and
 - (d) conduct periodic status analyses for the safety management system in operation.

- (3) Guidance on how to conduct the initial status analysis, periodic status analyses and risk assessments is provided as follows -

(a) Initial status analysis

Initial status analysis is the process of finding out the current position as regards how safety and health matters are being managed in the industrial undertaking. This should be done if the proprietor or contractor is establishing a safety management system for his industrial undertaking for the first time. The analysis should answer the question of "Where are we now?". The findings should be compared with

- the requirements of relevant legislation dealing with safety and health at work; and
- the best trade practices and trade performance,

to show how big the 'gap' is between 'where we are now' and 'where we want to be'. The legal requirements represent the minimum standards to be achieved, whereas the best trade practices and trade performance provide a direction for continuous improvement.

In conducting the analysis, the proprietor or contractor should ensure that it adequately covers each of the elements as appropriate to him under the Safety Management Regulation.

(b) Periodic status analyses

After the initial status analysis, the proprietor or contractor should ensure that similar status analyses of the safety management system in operation are conducted periodically to facilitate continuous improvement. The proprietor or contractor should define the scope and frequency of the periodic status analyses based on the needs of the relevant industrial undertaking, having regard to the following :

- the findings/recommendations of safety audits or safety reviews; and
- the changes in organisational structure, legislation and the introduction of new technology.

(c) Risk assessment

For planning purposes, risk assessment is used to estimate an industrial undertaking's overall risk profile. The findings will provide the basis for the proprietor or contractor to formulate risk control strategies, set out safety and health objectives, and define standards and priorities.

The basic steps in risk assessment include the following:

(i) Identification of hazards

This is the process of identifying all significant hazards relating to each work activity and considering who may be harmed and how harm may be done.

(ii) Determination of risk

This is the process of making a subjective evaluation of the risk associated with each hazard assuming that planned or existing controls are in place, and considering the effectiveness of the controls and the consequences of their failure. Also, it is necessary to decide if the risk is tolerable. In deciding whether a risk is tolerable, the proprietor or contractor has to take into account whether the condition is within statutory limits and/or conform to legal or internationally recognised standards. Only when these limits and standards are met and the risk is at, or has been reduced to, the lowest possible level that is reasonably practicable should a risk be considered tolerable.

After risk assessment, the following actions should be taken to eliminate or control the identified risks:

(i) Development of safety procedures and risk control measures

Safety procedures and risk control measures should be developed for risks that are not tolerable.

(ii) Implementation and maintenance of safety procedures and risk control measures

Safety procedures and risk control measures should be properly and fully implemented. Besides, these safety procedures and risk control measures should be properly maintained to ensure their effectiveness.

(iii) Review of safety procedures and risk control measures

Review is necessary whenever there is reason to suspect that the safety procedures and risk control measures are no longer effective, or if there has been a significant change in the matters to which they relate.

Risk assessment and risk control are discussed in detail in part 5.11 of this COP.

- (4) The proprietor or contractor should appoint a competent person to carry out status analyses and risk assessment. For these purposes, a competent person is a person who is -
- (a) appointed by the proprietor or contractor to ensure that the duty is carried out ; and
 - (b) by reason of substantial training and practical experience competent to perform the duty.

4.1.2 Developing

Developing is the process of determining how the safety and health objectives should be realised. The developing stage needs to answer the question: "How do we get there?".

- (1) At this stage, the proprietor or contractor of a relevant industrial undertaking is required to define, document and endorse a safety policy to spell out the safety and health objectives identified at the planning stage, and ensure that the policy includes a commitment to:
- achieve a high standard of occupational safety and health in compliance with legal requirements as the minimum, and in conformity with the best trade practices for continuous improvement;
 - provide adequate resources to implement the policy;
 - make occupational safety and health one of the primary responsibilities of line management, from the most senior executive to the first-line supervisor;
 - ensure its understanding, implementation and maintenance at all levels in the organisation;

- ensure employee involvement and consultation to gain commitment to the policy and its implementation;
- ensure the carrying out of periodic review of the policy and the management system; and
- ensure that employees at all levels receive appropriate training and are competent to carry out their duties and responsibilities.

Safety policy is discussed in detail in Part 5.1.

- (2) To carry out the safety policy, the proprietor or contractor should prepare an effective safety plan which sets out in specific terms:
- a clear direction and a series of actions for the relevant industrial undertaking to follow to achieve the objectives of the safety policy; and
 - clear guidance for managers and workers to work together to accomplish the objectives of the safety policy.

The safety plan should be established by the industrial undertaking's senior management, with the advice and assistance of safety and health personnel. As far as reasonably practicable, all levels of managers, supervisors and workers should be involved in the development of the plan. There is no fixed rule as to how detailed or lengthy a safety plan should be. Generally speaking, a safety plan should spell out the safety policy, along with the objectives and standards to be achieved, the statutory and, where appropriate, contractual obligations to be fulfilled, the risks to be tackled and the safety procedures and measures to be adopted. To be effective, the plan should set out:

- (a) a system of allocation of responsibilities for safety and health;
- (b) the arrangements for the responsibilities to be discharged;
- (c) the arrangements for carrying out each and every element of the safety management system applicable to the industrial undertaking; and
- (d) the arrangements for monitoring the success of the plan.

Where necessary, further details can be spelt out in safety manuals, method statements, handbooks, etc. All managers, supervisors and employees should know the plan and the role they play in its implementation. Establishing an effective communication system within the organization is therefore essential.

Finally, the safety plan should be regularly reviewed and, where necessary, modified in the light of experience to ensure effectiveness.

4.2 How to *implement* a safety management system ?

The **implementation** of a safety management system involves **organising** and **implementing**.

4.2.1 Organising

Organising is the process of prescribing formal relationships between people and resources in the organisation to accomplish objectives. At this stage, the proprietor or contractor of a relevant industrial undertaking is required:

- (a) to ensure that occupational safety and health is fully integrated across the relevant industrial undertaking and into all its activities, whatever the size or nature of its work;
- (b) to set aside an adequate budget commensurate with the relevant industrial undertaking's size and nature for implementing the policy and for properly establishing and maintaining the elements of the safety management system;
- (c) to structure the relevant industrial undertaking properly so that it can put the safety policy and plan into practice effectively;
- (d) to allocate safety and health responsibilities;
- (e) to make arrangements for the formation and operation of a safety committee, a safety department/unit/group and the appointment of a safety officer/advisor/director, etc.;

("safety officer" means a person employed as a safety officer in an industrial undertaking under the Factories and Industrial Undertakings (Safety Officers and Safety Supervisors) Regulations (Cap.59, sub.leg.))

- (f) to ensure all employees have the necessary authority to carry out their safety and health responsibilities;

- (g) to allocate to a person at the top management level a special responsibility for ensuring that the safety management system is properly implemented in all locations and spheres of operation within the relevant industrial undertaking;
- (h) to make arrangements for the effective dissemination of occupational safety and health information;
- (i) to make effective arrangements for the provision of specialist advice and services on occupational safety and health;
- (j) to make effective arrangements for employees at all levels to take part in safety and health activities; and
- (k) to identify the competencies required for employees at all levels and arrange the necessary training.

4.2.2 Implementing

Implementing is the process of carrying out or putting into practice the plans to achieve the desired objectives, with appropriate and adequate control to ensure proper performance in accordance with the plans. At this stage, the proprietor or contractor of a relevant industrial undertaking is required:

- (a) to determine and execute operation plans to control the risks identified and to meet the legal requirements as well as other requirements regarding safety management;
- (b) to provide adequate and effective supervision to ensure that the policies and plans are effectively implemented;
- (c) to prepare and maintain sufficient documentation to record and monitor the progress of the implementation of policies and plans; and
- (d) to have emergency response plans in place for foreseeable emergencies and maintain a high level of emergency preparedness.

4.3 How to *maintain* a safety management system ?

The ***maintenance*** of a safety management system involves **measuring** and **auditing or reviewing**, through which a proprietor or contractor knows whether the safety management system of his relevant industrial undertaking is working well or needs improvement, thereby maintaining the system in an efficient and effective state.

4.3.1 Measuring

Measuring is the process of checking performance against agreed standards to find out when and where improvement is needed, and a means of monitoring the extent to which policies and objectives are being met. The measuring stage provides a "feedback loop" for the stages of development and implementation of a safety management system and help the relevant industrial undertaking reinforce and maintain its ability to reduce risks to the fullest extent and to ensure the continued efficiency, effectiveness and reliability of the safety management system. At this measuring stage, the proprietor or contractor of a relevant industrial undertaking is required:

- (a) to carry out proactive monitoring through, for example, surveillance and inspections covering both hardware (i.e. premises, plant and substances) and software (i.e. people, procedures and systems of work), for the purpose of checking (i) compliance with legal requirements and (ii) whether the safety and health arrangements in place are effective in achieving the objectives of the safety policy;
- (b) to closely monitor the safety and health performance of individuals, particularly managers and supervisors, to see whether they fulfil their safety and health responsibilities ;
- (c) to carry out reactive monitoring to gauge the effectiveness of risk control systems through, for example, the monitoring of accidents/incidents, near misses, ill-health, and other safety and health performance indicators;
- (d) to determine the immediate causes of sub-standard performance and identify the underlying causes and the implications for the design and operation of the safety management system;
- (e) to rectify any sub-standard situations identified in the monitoring processes; and

- (f) to continuously feed back information collected from the monitoring processes to the developing and implementing stages to improve the safety management system in operation.

4.3.2 Auditing or reviewing

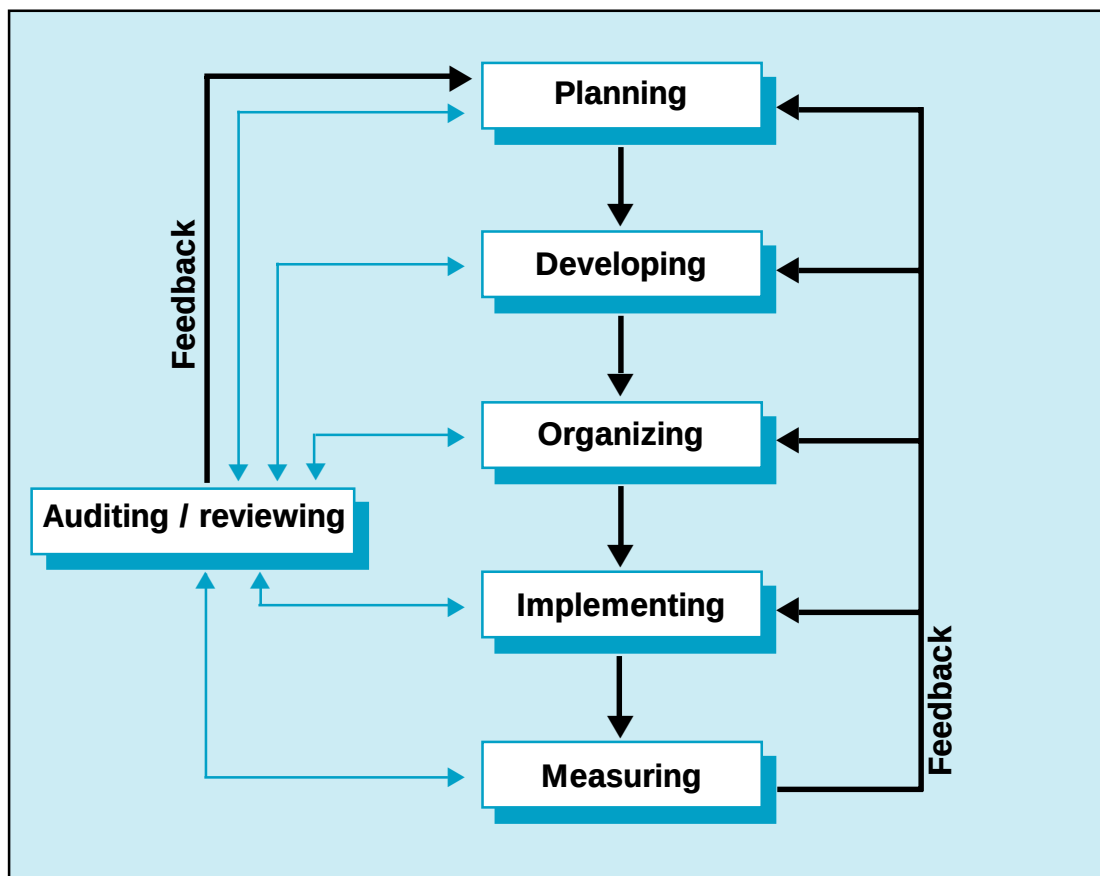
Auditing or **reviewing** is carried out to assess performance in addition to routine monitoring of occupational safety and health performance as described in Part 4.3.1 above. Auditing or reviewing constitutes the "feedback loop" to the planning stage which enables the relevant industrial undertaking to reinforce, maintain and develop its ability to reduce risks to the fullest extent and to ensure the continued efficiency, effectiveness and reliability of the safety management system. In addition, there should be information flowing between the development, implementation and maintenance stages and the auditing/reviewing stage so as to ensure the correct operation of the safety management system. At this auditing or reviewing stage, the proprietor or contractor of a relevant industrial undertaking is required:

- (a) to appoint a safety auditor or safety review officer to periodically conduct safety audits or safety reviews respectively in accordance with sections 13 or 19 of the Safety Management Regulation. Details are discussed in Part 6.2 or Part 7.2 of this COP;
- (b) to provide facilities, information, etc. to the safety auditor or safety review officer for purposes of safety audit or safety review respectively in accordance with sections 14 or 20 of the Safety Management Regulation. Details are discussed in Parts 6.3 and 6.4, or Parts 7.3 and 7.4 of this COP;
- (c) to take necessary actions on the safety audit or safety review report submitted, including drawing up a plan for improvements to the safety management system and implementing the plan in accordance with sections 16 and 22 of the Safety Management Regulation. Details are discussed in Part 6.5 or Part 7.5 of this COP; and
- (d) to continuously feed back information from the safety audit or review to the planning, developing, organising and implementing stages to improve the safety management system in operation.

4.4 Management model to *develop, implement and maintain* a safety management system

The various management functions described in Parts 4.1 to 4.3 above to ***develop, implement and maintain*** a safety management system can be graphically summarized by the following management model:

**Management model
to develop, implement and maintain a safety management system**



Legend

- Information link
- Control link

4.5 Application of the management model to individual elements of a safety management system

The above management model should be adopted not only in the **development, implementation** and **maintenance** of a safety management system, but also in the **development, implementation** and **maintenance** of each and every element as specified in Schedule 4 of the Safety Management Regulation constituting the system. The proprietor or contractor of a relevant industrial undertaking should apply the model to all elements of the safety management system applicable to his undertaking so as to exercise effective management of occupational safety and health in his organisation.

For example, as regards the element "in-house safety rules to provide instruction for achieving safety management objectives", the proprietor or contractor should first plan and develop the rules, and then organise his staff and resources to implement the rules. Furthermore, he should monitor compliance with the in-house safety rules and measure performance according to the set standards. Last but not the least, he should ensure that safety audits or safety reviews, as the case may be, are conducted periodically to check the effectiveness, efficiency and reliability of this particular element. With the feedback from the measuring, auditing or reviewing stages, the overall performance of this particular element can be improved in the next cycle of its development and implementation. The proprietor or contractor should document all information relating to the implementation and monitoring of the in-house rules and regulations for monitoring or reviewing purposes.

To further illustrate the application of the management model, let us look at another example regarding the element "training to equip personnel with knowledge to work safely and without risk to health". The proprietor or contractor should first prepare a safety training policy, setting out the training objectives. He should then devise a plan to implement the policy and arrange for employees to receive the necessary training. In addition, he should determine the standards of performance regarding the implementation of the plan on safety training. He should monitor and review the progress of the plan and the effectiveness of training provided to the employees in accordance with the set standard. He should also ensure that periodic safety audits or safety reviews, as the case may be, are conducted to check the effectiveness, efficiency and reliability of this particular element. Again, the results of the measuring, auditing or reviewing stages will provide valuable feedback for improving the overall performance of this particular element in its next cycle of operation. In order to

facilitate the monitoring and review of the training plan, the proprietor or contractor should ensure that all training programmes and the results of the evaluation of their effectiveness, etc. are adequately and properly documented.

4.6 Application of the management model to safety audits or safety reviews

The management model described in Part 4.4 above should also be used as a framework for assessing the overall performance of a safety management system by way of conducting safety audits or safety reviews.

Safety audits or safety reviews should assess whether or not the processes as described in the management model have been successfully and effectively followed by the proprietor or contractor to **develop, implement** and **maintain** a safety management system, including each of the elements specified in Schedule 4 of the Safety Management Regulation applicable to the relevant industrial undertaking. Besides, safety audit or safety review should assess whether or not a safety management system, including each of the elements in the aforesaid Schedule 4 applicable to the relevant industrial undertaking, has been **developed, implemented** and **maintained** in a way that conforms to the standards set out in Part 5 of this COP.

In general, the following questions can be answered after safety audits or safety reviews:

- (a) "Has the proprietor or contractor carried out effectively and efficiently the processes of **planning, developing, organising, implementing** and **measuring** as described in this COP in **developing, implementing** and **maintaining** the safety management system?".
- (b) "Has the proprietor or contractor **developed, implemented** and **maintained** the safety management system in accordance with the Safety Management Regulation in an adequate and effective manner by conforming to the standards set out in Part 5 of the COP?".

If the answers to the above 2 questions are not satisfactory or negative, further improvements to the safety management system in operation are necessary.

5. THE ELEMENTS OF A SAFETY MANAGEMENT SYSTEM

The 14 elements of a safety management system are as follows:

- 5.1 A safety policy which states the commitment of the proprietor or contractor to safety and health at work
- 5.2 A structure to assure implementation of the commitment to safety and health at work
- 5.3 Training to equip personnel with knowledge to work safely and without risk to health
- 5.4 In-house safety rules to provide instruction for achieving safety management objectives
- 5.5 A programme of inspection to identify hazardous conditions and for the rectification of any such conditions at regular intervals or as appropriate
- 5.6 A programme to identify hazardous exposure or the risk of such exposure to the workers and to provide suitable personal protective equipment as a last resort where engineering control methods are not feasible
- 5.7 Investigation of accidents or incidents to find out the cause of any accident or incident and to develop prompt arrangements to prevent recurrence
- 5.8 Emergency preparedness to develop, communicate and execute plans prescribing the effective management of emergency situations
- 5.9 Evaluation, selection and control of sub-contractors to ensure that sub-contractors are fully aware of their safety obligations and are in fact meeting them
- 5.10 Safety committees
- 5.11 Evaluation of job related hazards or potential hazards and development of safety procedures

- 5.12 Promotion, development and maintenance of safety and health awareness in a workplace
- 5.13 A programme for accident control and elimination of hazards before exposing workers to any adverse work environment
- 5.14 A programme to protect workers from occupational health hazards

Practical guidance in respect of these elements is given in the following pages.

5.1 A safety policy which states the commitment of the proprietor or contractor to safety and health at work

5.1.1 Safety policy

"Policy", in broad terms, refers to the general intentions, approach and objectives of an organisation together with the criteria and principles on which actions and responses are based.

An effective safety policy sets a clear direction for the organisation to follow. It contributes to all aspects of business performance as part of a demonstrable commitment to continuous improvement. The objective of defining an industrial undertaking's safety policy is to set down in clear and unambiguous terms its management's approach and commitment to safety and health at work. The organisation's most senior management should define, document and endorse its safety policy. The proprietor or contractor of a relevant industrial undertaking should ensure that the policy includes a commitment to:

- (a) recognise safety and health at work as an integral part of its business performance;
- (b) achieve a high level of occupational safety and health performance, in compliance with legal requirements as the minimum;
- (c) provide adequate and appropriate resources to implement the policy;
- (d) make the management of safety and health one of the prime responsibilities of managers at all levels, from the most senior executives down to the front line supervisory staff;

- (e) ensure its understanding, implementation and maintenance at all levels in the organisation;
- (f) consult and involve employees so as to secure their commitment to the policy and its implementation;
- (g) keep the policy and the management system under periodic review and audit/review compliance with policy; and
- (h) ensure that employees at all levels have received appropriate training and are competent to carry out their duties and responsibilities.

The safety policy should be specific and relevant to the industrial undertaking's nature of work. It should be able to convey (a) the general intentions, approach and objectives of the industrial undertaking, and (b) the criteria and principles on which its actions and responses are based.

5.1.2 Written policy statement

A proprietor or contractor of a relevant industrial undertaking shall prepare and revise as often as may be necessary a written policy statement in relation to the safety policy of the relevant industrial undertaking [*Section 9(1)(a) of the Safety Management Regulation*]. The policy statement shall include: (a) a statement of the proprietor's or contractor's general policy with regard to the safety and health of the workers in the relevant industrial undertaking; (b) a system of allocation of responsibilities for the carrying out of the policy; and (c) arrangements as to how the responsibilities are to be executed [*Section 9(2) of the Safety Management Regulation*].

It is important to realise that the Safety Management Regulation places the responsibility for safety and health on the proprietor or contractor of a relevant industrial undertaking. Many of the duties arising from that responsibility may however be delegated to managers and supervisors. The written policy statement should show clearly how these duties are allocated. Whilst the overall responsibility for safety and health rests with the top management, all individuals at every level will have to accept certain amount of responsibility for carrying out the policy. Whenever possible, key individuals should be named and their responsibilities defined.

It is equally important that employees at all levels in the relevant industrial undertaking should be able to see from the statement how they fit into the system, and, for example, what their own duties are and to whom they should go for advice, to report an accident or a hazard, or to obtain first aid or other help.

There is no rule about the appropriate length of a written policy statement. A smaller firm carrying out work that is not especially hazardous can have a shorter policy statement than that of a larger firm with complicated and hazardous processes. However, one possible approach is to set out its safety policy in fairly general terms, and to refer the readers to other documents, such as in-house safety rules, safety checklists, safety manuals, safety training programmes and emergency instructions, for full details.

The proprietor or contractor of a relevant industrial undertaking shall bring such statement and any revision of it to the notice of all the workers in the undertaking, keep a copy of the statement and make it available for inspection upon request by an occupational safety officer. *[Sections 9(1)(b) to 9(1)(d) of the Safety Management Regulation]*

An effective safety management system should have a self-regulating and self-improving mechanism built in. This is effected by reviewing the safety policy from time to time by way of (a) performance measurement and (b) safety audits or safety reviews. The proprietor or contractor shall cause the safety policy of the relevant industrial undertaking to be reviewed -

- (a) not less than once in each 2 years period commencing on the date on which the proprietor or contractor first brought the written policy statement and any revision of it to the notice of all the workers in the undertaking, and
- (b) as soon as is practicable after the proprietor or contractor alters the policy statement.

[Section 9(3) of the Safety Management Regulation]

Such alterations include changes to the core elements mentioned above like changes in organisational structure. A review may also be prompted by changes of particulars due to internal or external factors such as changes in technology, legislation or standards.

5.2 A structure to assure implementation of the commitment to safety and health at work

A safety organisation provides the structural framework for people in the company to work together in a coordinated manner, based on their knowledge, training and responsibilities, to achieve the safety and health objectives set by the top management. Within the organisation, responsibilities and relationships should be established to promote a positive safety and health culture and secure the implementation and continuous development of the safety policy. To properly establish such an organisation, there should be a process of prescribing formal relationships among people and resources in the company to accomplish the safety and health objectives. With the setting up of such an organisation, the general safety policy together with the safety plan can be effectively and efficiently implemented.

5.2.1 Line organisation

In Hong Kong, many companies are doing a good job in managing their safety and health. Most of the success stories revolve around a line organisation. Such organisation lays down direct and vertical relationships between different levels within the company and provides an effective and efficient organisational structure for ensuring the achievement of safety and health objectives. Under such a structure, formal safety and health responsibilities are allocated to all levels of personnel including directors, department/division/section heads, safety personnel, supervisors and workers. The proprietor or contractor should ensure that every person in the line organisation has an important safety and health role and that the person should be held accountable for safety and health matters. In this sense, safety should be a line function for all people in the line organisation with others, such as people from the safety, personnel, finance, materials and engineering departments, etc., playing only a supportive role.

5.2.2 Safety office or safety department

A safety office or safety department or similar set-up should be established to coordinate the implementation of safety plans or programmes by the line management. Its primary role is to advise the line management on safety and health practices, requirements and standards. It should not play a "line" role to implement the safety plans and programmes and certainly should not be held accountable for the consequences of the lack of control on the shop floor or at the site.

The safety office or safety department should include the following main roles:

- (a) To serve as a safety resource centre and in-house safety consultant.
- (b) To plan and prepare safety programmes.
- (c) To advise top management and line management on safety and health matters.
- (d) To coordinate the implementation of safety plans and programmes.
- (e) To monitor the implementation of safety plans and programmes.
- (f) To follow up corrective actions and verify the effectiveness of safety measures.
- (g) To serve as a safety trainer.

5.2.3 Allocation of responsibilities for safety and health

It is important that responsibilities for safety and health should be identified and allocated properly in a clear and logical way. Each member of the relevant industrial undertaking to which the responsibilities are allocated should know what he is responsible for and to whom he is responsible regarding safety and health matters. The allocation of responsibilities should be recorded in writing and it should be clearly stated that the final responsibility for safety and health rests with the top management. The top management must accept the responsibility for ensuring that safety and health is incorporated into the running of the business. A relevant person at the top management level should be designated to take up this final responsibility and accountability. Lastly, documents on allocation of major responsibilities for safety and health should be signed and dated by the above person and be reviewed and revised periodically to maintain their validity and effectiveness.

5.2.4 Main safety and health responsibilities of different levels of staff in the organisation

The main safety and health responsibilities of different levels of staff in the relevant industrial undertaking are set out as follows:

(1) Senior management

- To provide a safe and healthy working environment.
- To provide adequate resources (including financial resources), information and training.
- To provide a system of monitoring compliance with the safety policy.
- To ensure that relevant safety and health laws are complied with.
- To maintain contact with in-house safety advisors or safety officers, outside safety consultants, government departments, the Occupational Safety and Health Council and other professional bodies regarding safety and health matters.
- To provide and maintain a system responding to safety initiatives from safety advisors/safety officers/ persons in charge of the safety office, safety supervisors or workers, and to the safety advice from government officers.

("safety supervisor" means a person employed as a safety supervisor in an industrial undertaking under the Factories and Industrial Undertakings (Safety Officers and Safety Supervisors) Regulations (Cap.59, sub. leg.))

- To provide an effective, efficient and on-going safety and health promotion programme.
- To establish a system to identify, assess and eliminate hazards and control risks at work.
- To ensure that workplace safety rules, procedures and methods are developed, maintained and revised.

(2) Line management (including managers and supervisors)

- To assist the proprietor or contractor in the implementation of the safety policy, measures and procedures.
- To assist the proprietor or contractor in the identification of hazards, and the evaluation and control of risks.
- To supervise workers to ensure safe and correct working procedures.
- To ensure effective consultation on safety and health matters.
- To investigate work accidents and incidents.
- To participate in induction and on-going safety training programmes for workers.
- To respond to safety initiatives of safety advisors/safety officers/ persons in charge of the safety office, safety supervisors or workers and to the safety advice from government officers.
- To communicate effectively the hazards to workers and keep abreast of current safety and health legislation and information.
- To submit periodically to senior management statistics and reports concerning safety and health performance, unless the task is taken up by the safety office.

(3) Workers

- To conduct work activities in compliance with legal requirements.
- To closely follow safe work practices, procedures, instructions and rules and to perform all duties in a manner which ensures the safety and health at work of himself and others in the workplace.
- To provide feedback on the effectiveness of safety measures implemented on the shop floor.
- To contribute ideas on ways to improve safety.
- To report hazards to supervisor and warn colleagues of hazards.
- To report any injury, accident or incident at work to supervisor.
- To participate in toolbox meetings and other safety activities and to attend safety training.

(4) Safety advisor, safety officer or person in charge of the safety office

An in-house safety advisor, safety officer or person in charge of the safety office should have the responsibility to assist the top management and senior management in promoting the safety and health of workers in the relevant industrial undertaking. His main duties should include the following:

- To assist in the identification of hazards and evaluation of risks at work.
- To advise senior management or line management as to the measures to be taken to eliminate or control hazards.
- To assist in resolving shop floor safety and health issues.
- To conduct safety and health inspections to check safety performance and recommend corrective action to senior management or line management.
- To investigate occupational accidents and incidents and recommend remedial measures to prevent recurrence.
- To be well informed about workplace safety performance.

- To consult with senior management, line management and workers about changes in the workplace which would likely affect the safety and health at work of workers.
- To report safety performance regularly to the top and senior management and, where appropriate, to the safety committee.

(5) *Safety supervisor or the assistant to the person in charge of the safety office*

The responsibility of a safety supervisor or an assistant to the person in charge of the safety office should be to assist the top management, senior management and the in-house safety advisor, safety officer or person in charge of the safety office in promoting the safety and health of workers in the relevant industrial undertaking. His main duties should include the following:

- To assist the in-house safety advisor, safety officer or person in charge of the safety office in carrying out his duties.
- To supervise workers' observance of safety standards.
- To advise the senior management or line management as to the observance by workers of safety standards.
- To promote the safe carrying out of work in the workplace.
- To report regularly to the in-house safety advisor, safety officer or person in charge of the safety office on safety and health performance in the workplace.

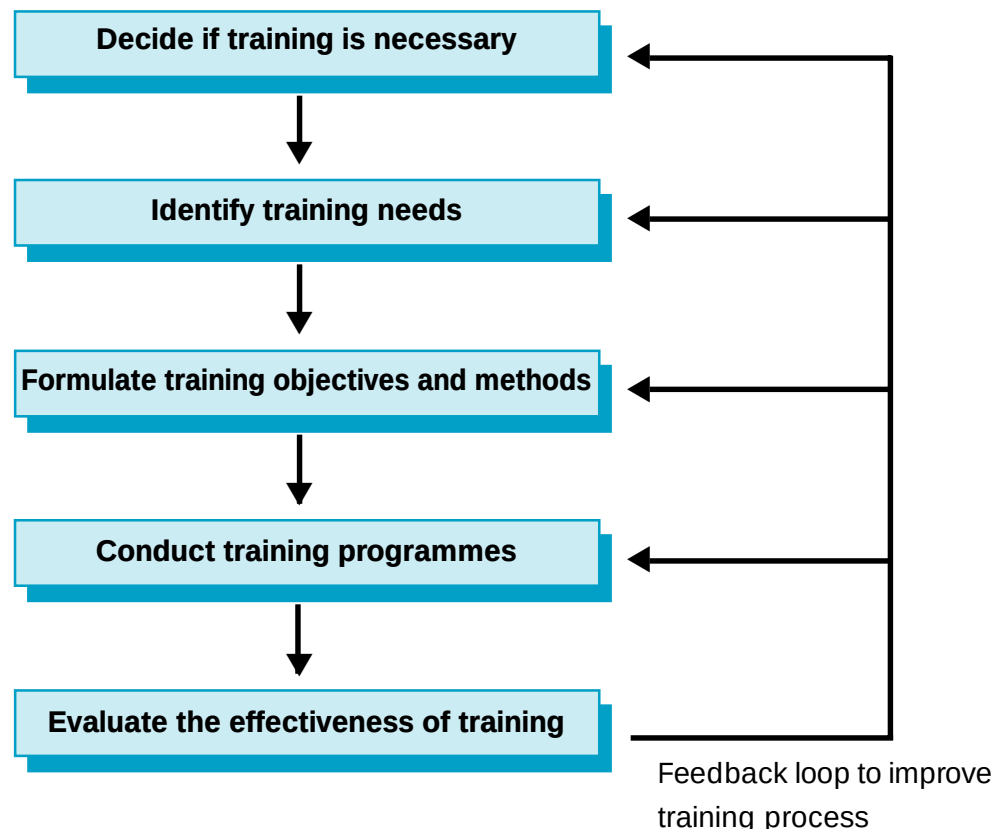
5.2.5 Safety committee

A proprietor or a contractor specified in Part 1 or Part 3 of Schedule 3 of the Safety Management Regulation shall establish not less than one safety committee in his industrial undertaking [*Section 10(a) of the Safety Management Regulation*] as part of the safety organisation. Safety committee is described in detail in Part 5.10 of this COP.

5.3 Training to equip personnel with knowledge to work safely and without risk to health

Training helps people acquire the skills, knowledge and attitudes to make them competent in the safety and health aspects of their work. It includes formal off-the-job training, instruction to individuals and groups, and on-the-job coaching and counselling. It is helpful to integrate the safety and health requirements of each job into the individual job specifications.

A proprietor or contractor of a relevant industrial undertaking should devise and refine or adjust his training policy systematically, as in the self-improving cycle shown below:



5.3.1 Deciding if training is necessary

Training should not be a substitute for proper risk control to, for example, compensate for ineffectively guarded machinery. The key to effective training is to understand job requirements and individual abilities.

5.3.2 Identifying training needs

To equip his workers with knowledge on work safety and health, the proprietor or contractor of a relevant industrial undertaking must first identify what their safety and health training needs are. These needs are best established as part of an overall training needs analysis. For existing jobs, he can do the following things:

- (a) Consult job-specific accident, ill-health and incident records to see what have caused losses of control and how they can be prevented;
- (b) Gather information from workers about how the work is done;
- (c) Find out when workers are working, what they are doing and why through observation and asking questions. This may be particularly relevant in the case of complex process plants where any analysis has to take account of all the possible consequences of human errors; and
- (d) Consult work risk assessment reports.

There are three main types of training needs, namely, organisational, job-related and individual training needs.

(1) *Organisational training needs*

The proprietor or contractor of a relevant industrial undertaking should let his workers know:

- (a) the organisation's safety policy and the philosophy underlying it; and
- (b) the structure and systems for carrying out the policy.

Moreover, he should also let them know which parts of the systems are relevant to them, what the major risks are and how they are controlled.

(2) Job-related training needs

These fall into two main categories, namely, management needs and non-management needs.

(a) Management needs include:

- (i) leadership skills;*
- (ii) communication skills;*
- (iii) techniques of safety management;*
- (iv) training, instruction, coaching and problem-solving skills relevant to safety and health;*
- (v) understanding of risks from a manager's perspective;*
- (vi) knowledge of relevant legislation and appropriate methods of control including risk management; and*
- (vii) knowledge of the organisation's planning, measuring, and auditing or reviewing arrangements.*

Some managers in key positions like those who devise and develop the safety management system, investigate accidents or incidents, take part in safety audits or safety reviews and implement emergency procedures, may have particular needs.

(b) Non-management needs include:

- (i) an overview of safety and health principles;*
- (ii) detailed knowledge of the safety and health arrangements relevant to an individual's job; and*
- (iii) communication and problem-solving skills to encourage effective participation in safety and health activities.*

(3) Individual training needs

Individual needs are generally identified through performance appraisal. They may also arise in situations where an individual has not received formal job training or instruction as part of his induction training. Training needs vary over time, and assessments should cover:

- (a) the induction courses for new starters, including part-time, temporary and imported workers;
- (b) the performance of long-term workers (especially those who may be involved in critical emergency procedures);
- (c) job changes, and situations involving staff promotion or someone standing in for someone else;
- (d) the introduction of new equipment or technology; and
- (e) the follow-up actions after accident / incident investigations.

5.3.3 Formulation of training objectives and methods

Based on job analysis and risk assessment, a proprietor or contractor can set objectives and priorities for training. These can be used as the basis for measuring the effectiveness of training and for determining whether the workers have attained the desired level of proficiency. The appropriate training methods can be devised according to the objectives.

5.3.4 Conducting training programmes

The proprietor or contractor should determine when and at what level training should be conducted, having regard to the actual situations. However, in no case should workers be made to shoulder the costs of training.

5.3.5 Evaluation of the effectiveness of training

It is necessary to measure the effectiveness of training. Pre-testing determines the needs for the programme; post-testing evaluates how much has been learned. It is important to assess whether the training programme has effectively corrected the previously identified unsafe behaviour. It is also of vital importance to obtain feedback on the training programme.

5.3.6 Maintenance of training records

Monitoring involves keeping track of who has been trained in what. Accurate records should be maintained for all safety and health training activities. Such records should, as far as reasonably practicable, include the following data:

- (a) Training date and time;
- (b) Training location;
- (c) Length of training;
- (d) Subject of training;
- (e) Contents of training;
- (f) Trainers and their expertise;
- (g) Attendees; and
- (h) Test results, if any.

5.4 In-house safety rules to provide instruction for achieving safety management objectives

The ultimate objective of any safety management system is to prevent injury and ill health in the workplace. To accomplish this it is necessary for a proprietor or contractor of a relevant industrial undertaking to devise in-house safety rules.

In-house safety rules cover general rules, specialised work rules, specialised work permits and procedures.

5.4.1 General safety rules

General safety rules include clear instructions to personnel in each of the following general areas:

- (a) safe operation of plant, machinery and equipment;
- (b) maintenance of plant, machinery and equipment;
- (c) proper and safe procedures for each production process, in the form of method statements;
- (d) rules and instructions on various risk control systems including the permit-to-work system;
- (e) provision, use and maintenance of personal protective equipment;
- (f) rules for the provision, use and maintenance of safe access and egress and for traffic and plant movement;
- (g) fire precautionary measures;
- (h) safe handling and movement of materials;
- (i) safety procedures for chemical processes and for the handling, transporting and storage of chemicals;
- (j) safety procedures for emergency;
- (k) duties and procedures for reporting hazards;
- (l) duties and procedures for reporting incidents, accidents and ill-health; and
- (m) good housekeeping of the workplace.

5.4.2 Specialised safety rules, work permits and procedures

There should be a system for the identification and establishment of specialised in-house safety rules, specialised work rules, specialised work permits and procedures. Proprietors and contractors of relevant industrial undertakings should refer to the following:

- (a) relevant legislation dealing with safety and health at work, which sets the minimum standards to follow;
- (b) Codes of practice and guidance materials issued by the Labour Department on safety and health at work;
- (c) International standards; and
- (d) the best trade practice and trade performance.

5.4.3 Consultation and communication

In devising in-house safety rules, the proprietor or contractor of a relevant industrial undertaking is encouraged to have prior consultation with his workers, where appropriate. If there is a safety committee, the details of the safety rules can be discussed in the safety committee. Work rules and procedures should be documented and communicated to all appropriate personnel in the relevant industrial undertaking.

It may be that not all workers will need to know all of the detailed in-house rules but the proprietor or contractor of a relevant industrial undertaking should ensure that every worker in the undertaking is clearly instructed as to what rules they should follow.

5.4.4 Supervision

To ensure compliance with these in-house rules, the proprietor or contractor of a relevant industrial undertaking should exercise due diligence in the supervision of his workers. Moreover, there should be a written disciplinary policy addressing violation of rules with details of punitive actions like verbal warnings, written reprimands, suspensions, demotions and, where necessary, termination. Recognition should, on the other hand, be given to workers following the rules to reinforce good behaviour.

5.5 A programme of inspection to identify hazardous conditions and for the rectification of any such conditions at regular intervals or as appropriate

5.5.1 Inspection as an active monitoring programme

Measuring the safety and health performance of a relevant industrial undertaking against predetermined plans and standards exposes the need for remedial action. Monitoring activities signalise management commitment to safety and health objectives in general. They are an essential part of developing a positive safety and health culture. There are two types of monitoring systems:

- (a) active systems which monitor the achievement of objectives and the extent of compliance with pre-set standards.
- (b) reactive systems which monitor accidents, ill health, incidents and other evidence of deficient safety and health performance.

Inspection is an active monitoring programme.

5.5.2 Goals of inspection

A programme for the inspection of hazardous conditions is an essential part of any active monitoring programme. It is one of the best tools available to identify problems and assess their risks before accidents and other losses occur. A proprietor or contractor should develop, implement and regularly review the inspection programme so as to achieve the following goals:

- (a) to identify potential problems that are not anticipated during the design or planning stage;
- (b) to identify equipment deficiencies, such as problems caused by normal wear and tear and abuse or misuse of equipment;
- (c) to identify improper worker actions, malpractices, etc.;
- (d) to identify changes in processes or materials which may have adverse effect on the safety and health of workers;
- (e) to identify inadequacies in remedial actions;

- (f) to provide management with information to assess the organisation's own safety and health performance; and
- (g) to demonstrate management commitment.

5.5.3 The programme of inspection

A system for inspecting workplace precautions is important in any active monitoring programme. It can form part of the arrangements for the preventive maintenance of plant and equipment which may also be covered by legal requirements. Equipment in this category includes lifts, cranes, chains, ropes, lifting tackles, power presses, electrical tools and equipment, scaffolds, trench supports, suspended working platforms and local exhaust ventilation, etc. But inspections should include other workplace precautions, such as those covering the use of premises, other places of work and systems of work.

A suitable inspection programme should take all risks into account. It should be proportional to the hazard profile of the relevant industrial undertaking. An inspection should concentrate on areas where it is likely to produce the greatest benefit and lead to the greatest control of risk. Key risk control systems and related workplace precautions should therefore be monitored in greater detail or more often (or both) than low-risk systems or management arrangements. For example, low risks may be dealt with by general inspections every month or two covering a wide range of workplace precautions such as the condition of premises, floors, passages, stairs, lighting, welfare facilities and first aid. Higher risks need more frequent and detailed inspections, perhaps weekly or even, in extreme cases, daily or before use (for example, pre-use check on plant and machinery).

The inspection programme should satisfy any specific legal requirements and reflect the undertaking's risk priorities. Suitable schedules and performance standards for the frequency and contents of inspection can help. The schedules can be supplemented with inspection forms or checklists, both to ensure consistency in approach and to provide records for follow-up action. The persons carrying out the inspections should have the appropriate safety training and experience so that they are competent to identify the relevant hazards and evaluate the associated risks.

A properly thought-out approach to inspection will include:

- (a) a well-designed inspection form to help plan and initiate remedial action by requiring those doing the inspection to rank any deficiencies in order of importance;
- (b) summary lists of remedial action with names and deadlines to track progress on implementing improvements;
- (c) periodic analysis of inspection forms to identify common features or trends which might reveal underlying weaknesses in the system; and
- (d) information to aid judgments about any changes required in the frequency or nature of the inspection programme.

5.5.4 Reporting and review

A proprietor or contractor of a relevant industrial undertaking should keep full records of each inspection with details of both positive and negative findings. Such reports should be analysed to identify repeated substandard situations and their underlying causes. Records of inspections should be kept for a period of not less than 3 years.

The results of inspections should be brought to the attention of the industrial undertaking's senior management. Information from safety inspections should be evaluated promptly to identify immediate risks and to ensure that appropriate remedial action is taken without delay. Any corrective action should be implemented as quickly as reasonably practicable. The inspection system should have a way of checking that remedial action is taken and monitored by the senior management.

An effective inspection programme should have a quality check built in to ensure that the line management is carrying out the monitoring function properly. A good reporting system with supervisory checks, for example, will be able to serve the purpose. The safety inspection programme should be regularly reviewed to identify deficiencies and possible areas for improvement.

5.6 A programme to identify hazardous exposure or the risk of such exposure to the workers and to provide suitable personal protective equipment as a last resort where engineering control methods are not feasible

5.6.1 Identification of hazardous exposure or the risk of such exposure to the workers

This element of the safety management system is a pro-active one which seeks to promote continuous improvement of the working environment and ensure that hazards are identified timely so that risks can be assessed and controlled before anyone (or anything) is adversely affected.

In order to identify hazards and assess their associated risks, the proprietor or contractor of a relevant industrial undertaking should in the first place prepare a list of items covering premises, plant, people and procedures, and gather information about them. The information required should include:

- (a) tasks being carried out, their duration and frequency;
- (b) location(s) where the work is carried out;
- (c) who normally/occasionally carries out the tasks;
- (d) who may be affected by the work (e.g. visitors, contractors, and the public);
- (e) training that personnel have received about the tasks;
- (f) written systems of work and/or permit-to-work procedures prepared for the tasks;
- (g) plant and machinery that may be used;
- (h) powered hand tools that may be used;
- (i) manufacturers' or suppliers' instructions for the operation and maintenance of plant, machinery and powered hand tools;
- (j) size, shape, surface character and weight of materials that may be handled;
- (k) distances and heights to which materials have to be moved by hand;

- (l) services used (e.g. compressed air, power supply);
- (m) substances used or encountered during work;
- (n) physical form of substances used or encountered (fume, gas, vapour, liquid, dust/powder, solid);
- (o) contents and recommendations of hazard data sheets relating to substances used or encountered;
- (p) legal requirements and standards relevant to the work, the plant and machinery used, and the substances used or encountered;
- (q) control measures in place;
- (r) reactive monitoring data (incidents, accidents and ill-health records associated with the work and the equipment and substances used) from within and outside the organisation; and
- (s) findings of any existing assessments relating to the work activity.

Details of risk assessment, evaluation and development of safety procedures and risk control measures are described in Part 5.11.

5.6.2 Provision of suitable personal protective equipment as a last resort where engineering control methods are not feasible

After the identification of the hazardous exposure or the risk of such exposure to the workers of a relevant industrial undertaking, the proprietor or contractor should find out whether planned or existing safety precautions (if any) are sufficient to keep the risk under control and meet legal requirements. If the findings are negative, he should take steps to control the risks so that they are reduced to the lowest level that is reasonably practicable, using engineering methods (like adopting a safer production process, enclosure of a noisy machine, removal of the hazardous substances at source, etc.).

If —

- (a) after the aforesaid engineering measures have been taken, the hazardous exposure or the risk of such exposure to the workers in the relevant industrial undertaking is still intolerable, or

(b) there are no feasible engineering methods to control the risk, the proprietor or contractor of the relevant industrial undertaking should carry out a programme to protect the workers in question by means of suitable personal protective equipment.

Personal protective equipment (PPE) includes the following:

Gloves, safety footwear, safety helmets, high visibility waistcoats, aprons, protective clothing for adverse weather conditions, eye protectors, hearing protectors, life-jackets, respirators, breathing apparatus including those used underwater, and safety harness.

In the hierarchy of control measures, PPE should always be regarded as the "last resort". Engineering controls and safe systems of work should always be considered first. It may be possible to do the job safely by another method which will not require the use of PPE. If that is not possible, it may still be feasible to adopt other more effective safeguards. For example, fixed screens rather than safety goggles can be provided to protect workers' eyes against swarf thrown off a lathe. However in some circumstances PPE will still be needed to control the risk adequately.

There are a number of reasons for this approach. First, PPE protects only the person wearing it, whereas measures controlling the risk at source can protect everyone in the workplace. Second, PPE's theoretical maximum levels of protection are seldom achieved in practice, and the actual level of protection is difficult to assess. Effective protection is only achieved when the PPE chosen is of the suitable type, correctly fitted and maintained, and properly used. Third, PPE may restrict the wearer's mobility or visibility to some extent. Other means of protection should therefore be used whenever reasonably practicable.

Nevertheless, proprietors or contractors should provide workers with appropriate PPE and training in its usage wherever there is a risk to safety and health that cannot be adequately controlled by other means.

The programme to provide PPE should include, but is not necessarily limited to, the following:

(1) Conducting PPE risk assessment

If it is necessary to provide PPE, a proprietor or contractor should conduct an assessment. The purpose of the assessment is to ensure that the correct PPE is chosen for the particular risk. Except in the simplest and most obvious cases which can be repeated and explained at any time, the assessment should be recorded and kept readily accessible by those who need to know the results. Risk assessment is described in detail in Part 5.11.

(2) Proper selection of PPE

The proprietor or contractor of a relevant industrial undertaking should determine what type of PPE is required, taking into consideration the legal requirements for specific situations, the intended use of the PPE, the manufacturer's product standards, the design of the PPE (in line with the principle of ergonomics?), acceptability of PPE to its wearer and user, and, if used in conjunction with other PPE, the question of compatibility, etc. Certain respiratory protective equipment may impose significant physiological burdens to the users. The proprietor or contractor should ensure that the users are medically fit for using the PPE.

(3) Steps to ensure adequate supply of PPE, including replacement supply, and spare parts.

(4) Steps to ensure the proper use, maintenance and storage of PPE.

(5) Steps (including supervision) to ensure that workers make proper use of PPE.

(6) Adequate training, information and instruction to ensure that workers make safe and proper use of PPE and can maintain it properly.

Maintenance should include, where appropriate, cleaning, disinfection, examination, replacement, repair and testing. The responsibility for carrying out maintenance should be clearly laid down, together with the details of the procedures to be followed and their frequency. Where appropriate, records of tests and examinations should also be kept.

Training, information and instruction should include:

- (a) an explanation of the risks present and why PPE is needed;
- (b) the operation, performance and limitations of the PPE;
- (c) instructions on the selection, use and storage of PPE;

- (d) factors affecting the protection provided by the PPE;
 - (e) recognising defects in the PPE and arrangements for reporting loss or defects; and
 - (f) hand-on practice in putting on, wearing, removing, inspection, testing and maintenance of PPE.
- (7) Monitoring the use of PPE.

This includes the steps to monitor the effectiveness of the PPE during use by observing the actual protection provided by the PPE. The results of monitoring would be very useful in providing information for reviewing the selection of the PPE.

5.7 Investigation of accidents or incidents to find out the cause of any accident or incident and to develop prompt arrangements to prevent recurrence

The investigation of accidents or incidents forms part of a reactive monitoring system which is triggered after an event and includes identifying and reporting:

- (a) injuries and cases of ill health;
- (b) other losses, such as damage to property;
- (c) incidents, including those with the potential to cause injury, ill health or loss;
- (d) hazards; and
- (e) weaknesses or omissions in performance standards.

Each of the above provides opportunities for a relevant industrial undertaking to check safety performance, learn from mistakes, and improve the safety management system and risk control. Information gathered from investigations is useful in reinforcing key safety and health messages.

There is value in investigating both actual and potential losses to learn how to prevent more serious events. Accurate reporting can be promoted by:

- (a) providing training which clarifies the underlying objectives and reasons for identifying such events;
- (b) creating a culture which emphasises an observant and responsible approach and the importance of having systems of control in place before harm occurs;

- (c) providing open, honest communication in a just environment, rather than a tendency merely to allocate "blame"; and
- (d) cross-referencing and checking first-aid treatments, health records, maintenance or fire reports and insurance claims to identify any otherwise unreported events.

5.7.1 Level and nature of investigation

Not all events need to be investigated to the same extent or depth. The proprietor or contractor needs to assess each event (for instance, using a simple risk-based approach) to identify where the most benefit can be obtained. The greatest effort should be focused on significant events where there have been serious injuries, ill health or losses as well as those which have the potential to cause widespread or serious injuries or losses. Investigations should:

- (a) identify reasons for any substandard performance;
- (b) identify underlying failures in the safety management system;
- (c) learn from events;
- (d) prevent recurrences; and
- (e) satisfy legal and reporting requirements.

Investigations should be led by someone with the status and knowledge to make authoritative recommendations. Usually, this will be a line manager or a safety officer. However, if events have serious or potentially serious consequences, a safety and health consultant/ advisor, a medical or nursing advisor, technical staff or equipment suppliers may be called in to provide assistance, and senior managers should be involved from the very beginning. Adequate training in relevant techniques should also be provided.

A good investigation should be prompt and thorough to enable remedial actions to be taken as soon as practicable after the event.

An investigation consists of 4 ingredients:

- (a) Collecting evidence about what has happened;
- (b) Assembling and considering the evidence;

- (c) Comparing the findings with the appropriate legal, industry and company standards, drawing conclusions on the causes and recommending measures to prevent recurrence; and
- (d) Implementing the recommendations and tracking progress.

Standard report forms can usefully guide people through the investigation processes outlined above and help the managers responsible for authorising necessary follow-up actions to set priorities. The recording system should enable:

- (a) information to be collected accurately and presented in a consistent form;
- (b) common causes, features and trends, which may not be apparent from the investigation of an individual event, to be analysed and identified;
- (c) useful information to be retained for future reference, including information on the time taken to carry out the investigation and the related costs; and
- (d) others to learn from a single event or a series of events.

5.7.2 Key data to be covered in accident, ill health and incident reports

- (a) Details of the injured person, including age, sex, experience, training, etc.;
- (b) A description of the circumstances, including the place, time, and conditions at the scene;
- (c) The direct causes of injuries, ill health or other losses;
- (d) The underlying causes like failures in workplace precautions, safety procedures, risk control systems or management arrangements; and
- (e) Details of the outcome, including in particular:
 - (i) the nature of the outcome — examples are injuries, ill health, damage to property, process disruptions and creation of hazards;
 - (ii) the severity of the harm caused, including the seriousness of injuries, ill health and losses;

- (iii) the immediate management response to the situation and its effectiveness. This involves the consideration of the following questions:
 - Has the situation been dealt with promptly?
 - Have the continuing risks been dealt with promptly and adequately?
 - Has the first-aid response been adequate?
 - Have emergency procedures been followed properly?
- (iv) Recommendations to prevent the recurrence of the accident or incident.

5.7.3 Following-up of the progress of the implementation of recommendations to prevent recurrence

The proprietor or contractor of a relevant industrial undertaking should ensure that there is a mechanism for implementing, with priorities, the aforesaid recommendations to prevent recurrence of accidents/incidents.

5.7.4 Statistical analysis

It is essential that a proprietor or contractor of a relevant industrial undertaking should perform statistical analysis based on the information collected from the investigation of accidents and incidents. The analysis will enable the management to identify common causes, features and trends which may not be apparent from the investigation of an individual event. This in turn provides valuable information for the management to review the safety plan and formulate corresponding action programmes.

A safety officer or line manager will be able to assist the proprietor or contractor in statistical analysis. However, in highly specialised areas involving, for example, complicated health issues, the proprietor or contractor may seek advice from professionals, like occupational health experts, on the setting up of a data base, and on the analysis and interpretation of the information.

5.8 Emergency preparedness to develop, communicate and execute plans prescribing the effective management of emergency situations

Emergency preparedness is vital because, when an emergency does occur, quick and correct response is necessary to reduce injuries, illnesses, property damage, environmental harm and public concern. Management should identify the types of emergencies the organisation needs to plan and prepare for.

5.8.1 Emergency planning

An emergency planning committee or a similar set-up (for example, a sub-committee of a safety committee) should be formed to identify all possible emergencies, evaluate their effects and impact, and prioritise and review the list of possible emergencies. To get a complete picture and to consider all possible scenarios, the committee should, as far as reasonably practicable, include representatives from all departments/sections in the relevant industrial undertaking. A list of potential emergency situations such as fire, electric shock, flood, explosion, hazardous chemical spills or releases, internal/external leaks of explosive or flammable gas, personal injuries and illnesses, natural disasters, electrical outage, town gas supply interruption and critical damage to facility/equipment, etc. should be drawn up, with priority properly accorded.

5.8.2 Emergency response plan

A working committee or similar set-up should be formed to work out the details of an emergency response plan for each of the possible emergencies on the list. The members of the working committee should come from the departments/sections likely to be involved in the possible emergency situations. The emergency response plan, covering what can and should be done, what equipment is necessary and what people are needed, should be developed for each emergency situation. It should be communicated to all workers and be made readily accessible to managers and supervisors. In addition, a notice outlining the plan should be posted up where it can be seen by all people. The emergency plan should, where appropriate, include the following:

- (a) an alarm system;
- (b) the procedures for reporting and declaring emergencies and, when they are over, announcing a return to normal;
- (c) a control centre – its location and resources (such as radio equipment, records, engineering drawings, a list of supporting personnel, etc.);
- (d) an emergency organisation – duties and responsibilities of emergency personnel;
- (e) procedures to be followed by employees who must remain to perform critical operations before they evacuate;
- (f) special teams for first aid, salvage, rescue, fire fighting and other operations, if necessary, and their duties;
- (g) training of team members, workers and staff;
- (h) facilities and equipment to meet the needs of emergencies (such as communication equipment for use during emergencies, fire hoses, fire extinguishers, spill containment materials, breathing apparatus, masks and special suits, first aid boxes, and emergency power supply to the main switchboard, sensors, alarm systems, and exit signs/lights.);
- (i) an evacuation route map and a safe assembly point;
- (j) a schedule for emergency drills to test readiness; and
- (k) a list of the authorities to contact in case of emergency.

After an emergency response plan has been put together, it should be kept in an emergency manual. The manual should include all information necessary to respond to various emergencies. It should contain floor plans and layout plans showing emergency exits, fire-fighting equipment, diagrams of vital chemical systems and, as far as practicable, the utility lines. Utility systems and special (if any)/regular fire extinguishing systems should be clearly marked in the plans. In addition, telephone numbers of key company personnel, police and fire services, and a list of outside bodies qualified to assist with special problems should be kept in the manual for easy reference. The manual should be kept in a secure area which is easily accessible to emergency personnel.

5.9 Evaluation, selection and control of sub-contractors to ensure that sub-contractors are fully aware of their safety obligations and are in fact meeting them

5.9.1 Evaluation and selection strategy

The evaluation and selection strategy should clearly aim at ensuring that only sub-contractors with high safety standards are selected for the work. A practicable approach to evaluate and select suitable sub-contractors is set out below:

(1) *Pre-qualification*

- (a) Each sub-contractor wishing to qualify as a bidder should be asked to provide a safety policy which should be vetted to assess its adequacy.
- (b) The sub-contractor should also be required to submit details of his -
 - safety organisation;
 - safety track records;
 - working experience with clients demanding high safety standards;
 - safe systems of work/safety programmes in place;
 - current safety management system; and
 - training programmes and standards.

These should also be vetted to assess adequacy.

- (c) Only when a sub-contractor passes the adequacy test mentioned in (a) and (b) above should he become a qualified bidder.

(2) *Identification of suitable sub-contractors*

- (a) Where reasonably practicable, all qualified bidders should be invited in writing to attend a pre-bid briefing and their attendance should be recorded.

- (b) Safety requirements, standards and specifications, the consequences of non-compliance and the relevant safety provisions in the contract, as well as local safety laws that apply, should be clearly communicated to bidders in writing during the pre-bid briefing.
- (c) Bidders should identify all the safety and health requirements in the specifications. To help them do this, a checklist of all the common safety and health problems which may arise from the work should be presented to them for reference before the bid is made. Where necessary and appropriate, an additional 'on site' briefing can be arranged for bidders who want to have a better understanding of the safety and health problems. Some topics that should be included in the checklist are:
 - Access to and egress from the places of work;
 - Working at heights;
 - Lifting appliances operation;
 - Fire prevention;
 - Electrical requirements;
 - Underground and overhead services;
 - Lighting requirements;
 - Manual handling operation;
 - Special hazards such as those inherent in working in confined spaces or working with asbestos, etc.;
 - Occupational health risks from noise and toxic fumes, etc.;
 - Storage of flammable substances and chemicals;
 - Personal protective equipment;
 - Emergency rescue/first-aid;
 - Welfare amenities such as toilets and drinking water facilities; and
 - Worker training requirements.

- (d) The bids submitted by the potential sub-contractors should be checked against the potential safety and health problems to ensure that all the safety and health hazards that may arise during the work have been clearly identified by them and that proper provisions will be made for the control of the risks assessed. Each potential sub-contractor should also be required to submit an outline safety plan for the implementation of the risk control measures. This plan should set out in summary form the sub-contractor's proposed means of complying with his obligations in relation to safety and health at work. Sufficient time should be allowed for sub-contractors to prepare the bids.
- (e) The contractor should select the sub-contractor who is able to identify all the safety and health hazards inherent in the work, can ensure that the most proper and adequate provisions will be made for the control of the risks, and has the best outline safety plan.

5.9.2 Control Strategy

The control strategy should aim at monitoring the safety performance of sub-contractors and keeping them on the right track to achieve the proprietor's or contractor's safety and health objectives in the execution of the contract. A practicable control approach should include the following:

(1) *Special terms and conditions in the contract*

All safety rules and provisions should be laid down in detail in the contract for the sub-contractor to follow and implement. One of the provisions should be that the sub-contractor abides by all the provisions of the proprietor's or contractor's safety policy, including compliance with workplace safety rules. In case the sub-contractor further sub-contracts all or part of his work to other sub-sub-contractors, the sub-contractor should ensure that the sub-sub-contractors are fully aware of the safety policy and the safety rules. The following special conditions should therefore be attached to the contract for the sub-contractor to follow:

- to inform any sub-sub-contractor of all safety requirements;

- to include observance of all safety requirements as a condition in any future sub-contract; and
- to require the sub-sub-contractor to do similarly if he in turn sub-contracts his work.

Another provision in the contract should require the sub-contractor to submit a detailed and comprehensive safety plan based on the outline safety plan, setting out how he and the sub-sub-contractors (if any) will implement the safety measures for controlling the risks during work in compliance with all the safety and health provisions stipulated in the contract. The sub-contractor should adhere to the safety plan in carrying out his obligations under the contract and should ensure that his own sub-sub-contractors (if any) receive copies of the safety plan and comply with its requirements as well.

In addition, a subcontractor's participation in on-site safety committees should also be one of the contract conditions.

(2) *Risk assessment by the sub-contractor before the commencement of work*

The sub-contractor should be requested to conduct a risk assessment before work commences and recommend the necessary safety procedures and risk control measures. The system should spell out how the sub-contractor should organise and perform his work to reduce risks to workers' safety and health.

The sub-contractor should be required to submit the risk assessment report, together with the recommended safe system of work, to the proprietor or contractor for scrutiny and endorsement.

(3) *Control of sub-contractors*

The proprietor or contractor should adopt the following measures to control the safety performance of a sub-contractor:

- The sub-contractor should be required to appoint a person or a team to co-ordinate all aspects of the contract, including safety and health matters on site. In addition, the sub-contractor should develop communication paths to pass on all relevant safety information to those at the shop floor level.

- The sub-contractor should be required to attend a meeting to discuss the safety aspects of the work prior to the commencement of the contract.
- The sub-contractor should be required to attend regular progress meetings with all other parties, at which safety and health should be on the agenda.
- The proprietor or contractor should inspect his sub-contractor's activities at regular intervals. The frequency of inspection should be commensurate with the hazards and complexity of the construction project. Generally, inspection at weekly intervals is desirable.
- The sub-contractor should be required to provide written method statements before carrying out any work with special hazards like demolition work, confined space work, asbestos work, work on energised electrical installations, falsework erection work, steel erection work and any other work involving disruptions or alterations to main services or other facilities. In the event that there is a need to deviate from the method statement, further progress of work should be withheld until a revised method statement has been drawn up and endorsed.
- The sub-contractor should be required to report all lost-time accidents and dangerous occurrences, including those of sub-sub-contractors.
- The sub-contractor's safety and health training programme should be regularly monitored to ensure effectiveness.

5.10 Safety committees

5.10.1 Setting up of safety committee

A proprietor or contractor specified in Part 1 or 3 of Schedule 3 of the Safety Management Regulation shall establish not less than one safety committee having the function of identifying, recommending and keeping under review measures to improve the safety and health of the workers in the relevant industrial undertaking. *[Section 10(a) of the Safety Management Regulation]*

In general, it should be unnecessary for a proprietor or contractor of a relevant industrial undertaking to have two or more committees for the same workplace to represent, e.g., different levels of staff. Safety committees are most likely to prove effective when their work is related to a single establishment rather than a collection of workplaces at different locations.

Therefore, if the proprietor or contractor is running a business consisting of two or more establishments in separate places, he should have two or more safety committees. Examples are:

- (a) A large factory with branches in different districts.
- (b) A construction company operating construction sites at different locations.

In these cases, there should be a safety committee per location at the workplace level, as well as a central safety committee at the enterprise level.

5.10.2 Functions of safety committees

A safety committee should carry out the following functions for the purposes of identifying, recommending and keeping under review measures to improve the safety and health of workers in a relevant industrial undertaking:

- (a) monitoring of the safety policy — determining whether it is adequate and how well it is being implemented;
- (b) on-going evaluation of hazards and arrangements to implement safety measures;

- (c) establishment of arrangements to deal promptly and effectively with dangerous working conditions, including those coming to light in disputes arising from workers refusing to work on the grounds of imminent danger;
- (d) discussion and establishment of a mechanism to resolve disputes when workers refuse work on the grounds of imminent danger;
- (e) assistance in the development of safe working procedures and safe systems of work;
- (f) vetting of accident/incident/ill-health statistics to identify trends and monitor safety performance, and submission of reports on its findings to the top management with recommendations;
- (g) examination of safety audit reports and submission of reports on its observations to the top management with recommendations;
- (h) scrutiny of safety performance reports submitted by the safety office and giving of direction on appropriate actions;
- (i) monitoring of the adequacy and effectiveness of safety training;
- (j) monitoring of the adequacy of safety and health communications and publicity in the workplace;
- (k) organisation of safety promotion activities such as safety competitions, exhibitions, safety incentive schemes, and safety suggestion schemes; and
- (l) provision of links with external sources regarding safety and health.

The safety committee should organise regular site visits for its members to enable them to experience the actual situations on the ground so that they can add a practical touch to their working strategies. Their regular presence on site also serves good public relations and promotional purposes.

5.10.3 Duty to implement measures recommended

The proprietor or contractor shall implement, so far as is reasonably practicable, any measures recommended by the safety committee in relation to matters of safety and health at work of the workers in the undertaking *[Section 10(b) of the Safety Management Regulation]*. A mechanism should be established whereby decisions and actions recommended by the safety committee can be effectively communicated to those persons responsible for their implementation. Where necessary, monitoring arrangement should be set up by the safety committee to follow through the implementation of its recommendations.

5.10.4 Composition of safety committee

A safety committee should have a wide representation adequately covering the interests of management and all workers, yet its size should be kept as reasonably compact as possible. The number of members representing workers in the relevant industrial undertaking shall not be less than half the members of the committee *[Section 11(1)(a) of the Safety Management Regulation]*. Members of the safety committee can be nominated or elected. Management membership should come from as many levels as practicable, with senior management well represented and a careful mix of line management and functional management. The aim is to ensure that the committee -

- (a) is given adequate authority to consider views and recommendations, and make decisions; and
- (b) is provided with the necessary expertise to formulate practicable policies and strategies.

Supervisors are the key men in regard to safety as well as production and their active cooperation is therefore essential. It is most important that the supervisors should be kept continuously informed of the safety committee's work. They should therefore have a representative on the safety committee.

In undertakings where company doctors, industrial hygienists or safety officers or advisers are employed, they should be made ex-officio members of the safety committee. Other specialists, such as project engineers, chemists, organisation and methods personnel and training officers may also be asked to attend meetings on an ad hoc basis when issues on which they have expertise are to be discussed.

The proprietor or contractor required by section 10 of the Safety Management Regulation to establish a safety committee shall ensure that the safety committee is provided with a written statement setting out the rules governing its membership.

[Section 11(1)(b) of the Safety Management Regulation]

The roles of two of the key members, namely the *chair* and the *safety advisor*, in a safety committee are as follows:

Chair

The success of a safety committee depends on the commitment and support given to it by the top management. This is best expressed by the appointment of a senior manager as the chair. For a safety committee at the enterprise level, the chairman should be appointed by the top management and given the authority to make decisions. He should report regularly to the top management and keep safety and health on the agenda. For a safety committee at the workplace level, the chairman should be the top person in charge of the workplace (for example, the project manager in the case of a construction site).

Safety adviser/Safety Officer/Person in charge of the safety office

His participation is extremely valuable by virtue of his expertise. As his job demands impartiality, his advice should be available equally to members representing management and workers on the committee.

Size

Regarding the size of the safety committee, a balance should be struck between a wide representation and a reasonable size. A safety committee should not be too large. It should normally have no more than 15 members.

5.10.5 Proceedings of meetings, etc.

A proprietor or contractor required by section 10 of the Safety Management Regulation to establish a safety committee shall ensure that the safety committee is also provided with a written statement setting out rules governing its terms of reference and meeting procedures [*Section 11(1)(b) of the Safety Management Regulation*].

Only matters relating to safety and health at work of the workers in the relevant industrial undertakings shall be discussed at the meeting of the safety committee. [*Section 11(2) of the Safety Management Regulation*]

In general, the frequency of meetings of a safety committee depends upon the volume of work to be handled and the complexity and nature of hazards in the workplace. Nevertheless, in any case, a proprietor or a contractor shall ensure that a safety committee meets at least once every three months [*Section 11(1)(c) of the Safety Management Regulation*].

Monthly meetings are usually found to be satisfactory. If sub-committees are formed for particular tasks, it will normally be necessary for them to meet more often because their aim is to produce a specified result within a time limit.

The safety committee's programme should be arranged well in advance and notices of the dates of meetings published to let all members know. Reports and relevant materials should also be circulated to all members in advance.

The proprietor or contractor of a relevant industrial undertaking shall ensure that proper records on safety committee meetings are kept to provide a progress report on decisions made, recommendations put forward and actions taken. These records shall be —

- (a) kept for not less than 5 years after the date of the meeting to which the record concerned relates; and
- (b) made available for inspection upon request by an occupational safety officer.

[*Section 11(d) of the Safety Management Regulation*]

The decisions and recommendations of a safety committee should be brought to the notice of employees. The relevant documents should be displayed or circulated to them for reference.

5.10.6 Protection of safety committee members

A proprietor, contractor or employer shall not –

- (a) terminate, or threaten to terminate, the employment of; or
- (b) in any way discriminate against,

a worker by reason of the fact that the worker has performed his function as a member of a safety committee.

[Section 12 of the Safety Management Regulation]

5.11 Evaluation of job related hazards or potential hazards and development of safety procedures

This element refers to the carrying out of job related risk assessment and risk control. The objective of risk assessment and risk control is to provide a means whereby job hazards or potential hazards are identified, evaluated and managed in a way that eliminates them or reduces them to a tolerable level. Safety procedures and risk control measures that are to be taken to prevent the hazards and to control the risks should be developed after risk assessment.

5.11.1 Programme for risk assessment and risk control

The relevant industrial undertaking should establish and maintain a programme for identification of job hazards, assessment of risks, development, implementation and maintenance of safety procedures and risk control measures and review. The programme should aim at:

- (a) recording known hazards;
- (b) identifying new hazards;
- (c) evaluating the risks associated with the hazards;
- (d) analysing the effects or the potential effects resulting from these risks; and
- (e) developing and implementing means to eliminate the risks or to reduce them to a tolerable level.

Risk assessment and risk control should:

- (a) form part of the safety inspection programme referred to in Part 5.5 ;
- (b) be a major component in the risk control programme referred to in Part 5.6; and
- (c) be an essential part of the health protection programme covered by Part 5.14 of this COP.

The proprietor or contractor should ensure that persons responsible for the analysis of hazards, evaluation of risks, and determination of the means of eliminating or reducing any risks are competent and given the necessary support so that they can perform their duties effectively. Please see Part 4.1.1(4) regarding the competency of a person carrying out risk assessment.

5.11.2 Main stages in risk assessment and risk control

There are five stages in risk assessment and risk control, namely:

- (a) identification of hazards;
- (b) determination of risk;
- (c) development of safety procedures and risk control measures;
- (d) implementation and maintenance of safety procedures and risk control measures; and
- (e) review of safety procedures and risk control measures.

5.11.3 Hazard identification

Hazard identification is the process of identifying all situations or events that could give rise to the potential for injury, illness or damage to plant or property. Hazard identification should take into account how things are being done, where they are done and who is doing them, and should also consider how many people are exposed to each hazard identified and for how long. The following should be accorded top priority in the hazard identification process:

- ***High frequency accidents or near misses***

Jobs with a high frequency of accidents or near misses pose a significant threat to the safety and health of workers and should therefore be given top priority.

- ***History of serious accidents causing fatalities***

Jobs that have already produced fatalities, disabling injuries or illnesses, regardless of the frequency, should have a high priority in the hazard identification process.

- ***Existence of a potential for serious harm***

Jobs that have the potential to cause serious injury or harm need hazard analysis, even if they have never produced an injury or illness.

- ***Introduction of new jobs***

Whenever a new job is introduced, a hazard identification process should be conducted before any worker is assigned to it.

- ***Recent changes in procedures, standards or legislation***

Jobs that have undergone a change in procedure, equipment or materials, and work affected by new regulations or standards will need risk assessment.

Major methods for identification of hazards include:

- ***Direct observation method***

This involves observing an experienced worker with good safety awareness carrying out the work several times. The job steps and the hazards in each of these are recorded.

- ***Recall method***

This should be done for jobs that are rarely performed. The method involves inviting the designers, engineers, supervisors and workers involved in the jobs to attend a brainstorming session, during which they would look into the materials, machines and equipment used, and the job steps to identify the hazards inherent in such jobs.

In order to identify hazards and evaluate their associated risks, the proprietor or contractor of a relevant industrial undertaking should in the first place prepare a list of items covering premises, plant, people and procedures, and gather information about them. Details of information required are given in Part 5.6.1. When all the necessary information is in hand, the hazards related to work activities can be identified.

5.11.4 Determination of risk

The risk associated with a hazard is a reflection of the likelihood that the hazard will cause harm and the severity of that harm. The two elements of risk, i.e. likelihood and severity, are independent of each other. The vast majority of hazards are relatively straightforward and requiring only a simple method of risk rating. The method incorporates a judgment as to whether or not a risk is tolerable. Such a method is illustrated as follows:

- (1) For each hazard identified, ask the question "What if?". Realistically, what is the worst likely outcome (i.e. the potential severity of harm) ? Is it a fatality, major injury/permanent disability including permanent ill health, a minor injury, or no injury and only plant damage? For the purpose of determination of risk, the severity of harm can be divided into 3 categories:

- Slightly harmful:

Examples are -

- superficial injuries; minor cuts and bruises; eye irritation from dust;
- nuisance and irritation (e.g. headaches); ill-health leading to temporary discomfort.

- Harmful:

Examples are -

- lacerations; burns; concussions; serious sprains; minor fractures;
- deafness; dermatitis; asthma; work related upper limb disorders; ill-health leading to permanent minor disability.

- Extremely harmful:

Examples are -

- amputations; major fractures; poisonings; multiple injuries; fatal injuries;
- occupational cancer; other severe life shortening diseases; acute fatal diseases.

- (2) Make a judgment about the probability or likelihood of harm occurring based on the following table:

Probability/likelihood	Description
Likely/frequent	Occurs repeatedly/event only to be expected
Unlikely	Rather remote, though conceivable
Highly unlikely	So unlikely that probability is close to zero

If the judgment is "highly unlikely", this needs to be subject to particularly rigorous scrutiny as, in reality, this is a relatively rare situation. Decisions as to whether or not action is needed should then be made by reference to the matrix formed by probability/likelihood and the likely outcome (i.e. severity) which is usually called the Risk Level Estimator. The following table illustrates a Risk Level Estimator:

Risk Level Estimator

	Slightly harmful	Harmful	Extremely harmful
Highly unlikely	Trivial risk	Minor risk	Moderate risk
Unlikely	Minor risk	Moderate risk	Substantial risk
Likely	Moderate risk	Substantial risk	Extreme risk

Action should be taken according to a list of priority. Extreme risks should be accorded the first priority, substantial risks the second priority; moderate risks the third priority and so on. In deciding whether a risk is tolerable, the proprietor or contractor has to take into account whether the condition is within statutory limits and/or conform to legal

or internationally recognised standards. Only when these limits and standards are met and the risk is at, or has been reduced to, the lowest possible level that is reasonably practicable should a risk be considered tolerable.

Generally, in determining risks levels, it is not necessary to make precise numerical calculations. Normally, complex methods for quantified risk assessment should only be required where the consequences of failure could be catastrophic. In the majority of situations, the above-mentioned method would be good enough. However, for major or complex hazards, such as those associated with major hazard plants, a variety of techniques are available for assessing the risks involved. Examples are the "hazard and operability study", the "failure mode and effect analysis" and the "fault tree analysis". These are highly sophisticated techniques and should only be used by professionals adequately trained in these areas.

5.11.5 Development of safety procedures and risk control measures

Safety procedures and risk control measures are procedures and measures to be put in place to reduce risk to a tolerable level.

When deciding on safety procedures and risk control measures, the list below should be considered, in the order given. Safety procedures and risk control measures lower down the list should only be used if it can be shown that using a procedure and/or measure higher up the list is not reasonably practicable.

List of safety procedures and risk control measures

- (1) Procedures and measures to eliminate hazards at source: for example, using a non-hazardous substance instead of a hazardous one.
- (2) Procedures and measures to reduce hazards at source: for example, replacing a noisy machine with a quieter one.
- (3) Procedures and measures to remove workers from the hazard: for example, paint spraying by unattended robots.
- (4) Procedures and measures to contain hazards by enclosure: for example, installing soundproofing enclosure for a noisy machine.

- (5) Procedures and measures to reduce worker exposure: for example, reducing exposure to noise by reducing the hours of work.
- (6) Procedures and measures to ensure the proper use of personal protective equipment as the last resort; for example, using hearing protectors for workers operating noisy machines.

In developing safety procedures and risk control measures, the proprietor or contractor should also refer to Parts 4.1.1(3)(c), 5.4, 5.6, 5.13 and 5.14 dealing with risk assessment, risk control, specific procedures and control measures.

5.11.6 Implementing and maintaining safety procedures and risk control measures

For safety procedures and risk control measures to be implemented effectively and efficiently, they should be as far as practicable developed at the workplace with the participation of all levels of staff. Feedback from people implementing the safety procedures and risk control measures should be encouraged so that improvement to the procedures and measures can be made.

Maintaining safety procedures and risk control measures requires scheduled inspections and maintenance. It also requires the enforcement of discipline to ensure that people do not tamper with safety procedures and risk control measures (e.g. by removing machine guards).

5.11.7 Review of safety procedures and risk control measures

Whatever safety procedures and risk control measures are used, they should be reviewed if there is reason to suspect that they are no longer effective, or if there has been a significant change in the matters to which they relate.

Examples are :

- (1) When information is obtained about a previously unknown design or manufacturing fault, or about a previously unidentified hazard.
- (2) When the design is revised or modified.
- (3) When the system of work associated with the plant is changed.

- (4) When the plant is moved.
- (5) When there is a change to the workplace environment.

In the circumstances, the risk has to be reassessed and new safety procedures and control measures devised.

5.12 Promotion, development and maintenance of safety and health awareness in a workplace

The objective of safety promotion is to develop and maintain awareness among all personnel of (a) the organisation's commitment to safety and health; and (b) individual persons' responsibility to support that commitment. The proprietor or contractor of a relevant industrial undertaking should recognise that the promotion of safety and health is an effective way of advancing the culture of safety and health in the workplace and of reinforcing the concept that safety and production are inseparable.

5.12.1 The need for a safety promotion programme

Safety promotion programmes should have clearly defined objectives. They require very careful thought and consideration if the maximum benefit is to be obtained. The proprietor or contractor should develop, as part of a safety promotion programme, a procedure to recognise and acknowledge good safety performance either by individuals, teams, sections, departments or the organisation. He should appoint a coordinator for the programme to ensure its smooth implementation.

5.12.2 Safety promotion approaches

- (1) *Promotion of safety in meetings and seminars etc.*

A meeting can provide a good opportunity for promoting safety. Meetings suitable for promoting safety include orientation meetings for new comers, training meetings, and tool-box meetings. Safety and health films/videos can be shown during these meetings with

time allowed for discussion after the viewing. Safety seminars and conferences can also be used to promote safety.

(2) *Promotion of safety to individuals*

The line managers can promote safety directly to all subordinates during the normal course of work. Through the day-to-day contacts, they can get the safety messages across and make workers accept safety as a way of life.

(3) *Promotion of safety through safety publications, posters, etc.*

Safety can be promoted through the circulation of safety and health publications, like safety bulletins, newsletters, leaflets and safety magazines. For workers who do not like reading, the use of safety posters, banners and billboards may prove more appealing. Posting of news cuttings on notice boards highlighting spectacular accidents would also have a strong impact.

(4) *Promotion of safety through campaigns*

Campaigns are perhaps the most high-profile way to promote safety. They can be used to raise safety awareness and promote good practices and safety standards. Safety campaigns usually involve the mobilisation of people at different levels for a cause and can thus focus minds on safety issues and spread the safety messages across the entire workforce. Safety campaigns can be in the form of award schemes. For example, by launching a "good housekeeping" award scheme, the management can encourage staff at all levels to participate in a competition in which individuals, teams, sections, units, departments, etc., demonstrating the best housekeeping practices will be picked out for awards. The campaigns can effectively arouse widespread awareness of the subject, with far-reaching implications for the organisation's long-term safety performance. Other forms of safety promotion include company-wide safety quizzes, subject-specific educational drives and roving exhibitions.

In considering which approach or approaches to take, a proprietor or contractor should take into account the culture and other characteristics of the organization, or workplace, in question. The most important thing is that the promotional activities should be able to convey a clear message to all levels of personnel that safety is taken seriously within the industrial undertaking.

5.12.3 Successful safety promotion programmes

Successful safety promotion programmes usually have the following characteristics:

- (a) They address properly identified safety problems.
- (b) They have clearly defined focus, themes and objectives.
- (c) Activities in support of the main theme are well organised and co-ordinated.
- (d) Incentives for widespread participation in the programme are provided.
- (e) Top management's total commitment is clearly demonstrated.

5.13 A programme for accident control and elimination of hazards before exposing workers to any adverse work environment

This element refers to a process control programme aimed at identifying occupational safety and health risks and properly planning the work process to control those risks. The process control programme can be applied to all processes, from construction of bridges, building of ships to more specific processes like the manufacturing of highly hazardous substances. An effective process control programme requires a systematic approach to evaluating the whole process. Using this approach, the process design and technology, operational and maintenance activities and procedures, emergency plans and procedures, training programmes, and other elements which impact on the process are all considered in the evaluation. The various lines of defence incorporated into the design and operation of the process to abate or reduce the safety and health risks need to be evaluated and strengthened to ensure their effectiveness at each level. The following stipulates some of the main components of a process control programme.

5.13.1 Provision of process safety information

Complete and accurate written information concerning process materials, chemicals, technology and equipment is essential to an effective process control programme and to process hazard analysis as described in Part 5.13.2. The compiled information is a necessary resource for a variety of users including those performing process hazard analysis, those developing the training programme and the operating procedures, and the contractors whose workers will be working with the process, if any. Besides, process technology information, being part of the process safety information package, should include appropriate diagrams (such as block flow diagrams, process flow diagrams and piping and instrument diagrams) of the process to be carried out. Other information may also be required, such as: the established criteria for maximum inventory levels for process materials and chemicals; limits beyond which the conditions would be considered upset conditions; and a qualitative estimate of the consequences or results of deviation that could occur if the established process limits are exceeded. The information pertaining to process equipment design and the codes and standards relied on to establish good engineering practice should also be documented.

5.13.2 Process hazard analysis

A process hazard analysis is similar to the risk assessment method as described in Part 5.11. It should be an organised and systematic effort to identify and analyse the significance of potential hazards associated with the carrying out of a specific process in the relevant industrial undertaking. It should provide information to assist the top management in making decisions for improving safety and health standards in the process. Process hazard analysis should be directed towards analysing the potential causes and consequences of the occurrence of accidents, particularly those likely to result in injuries, fires, explosions and releases of toxic or flammable substances. It should focus on equipment, instrumentation, utilities and human actions that might impact on the process. These considerations will assist in determining the hazards and potential failure points or failure modes in a process.

The selection of a technique to carry out a process hazard analysis would be influenced by many factors including the level of existing knowledge about the process. The questions to be asked include: (a) "Is it a process that

has been operated for a long period of time with little or no innovation and extensive experience has been gained from its use?"; and (b) "Is it a new process or one which has been changed frequently with the inclusion of innovative features?" Also, the size and complexity of the process would influence the decision as to the appropriate technique to be used. The simple checklist methodology works well when the process is very stable and no changes have been made, but it is not as effective when the process has undergone extensive changes.

The techniques commonly available for formal assessment of major or complex hazards as described in Part 5.11.4 can be used to carry out process hazard analysis.

5.13.3 Operating procedures

After conducting process hazard analysis, the proprietor or contractor of the industrial undertaking should devise the corresponding operating procedures which can effectively eliminate or control the risks associated with the process. Operating procedures include work method statements and, where applicable, permit-to-work systems. Operating procedures should describe tasks to be performed, data to be recorded, operating conditions to be maintained, samples to be collected, and safety and health precautions to be taken. The procedures need to be technically accurate, understandable to workers involved and revised periodically to ensure that they reflect current operations. Operating procedures should be reviewed by engineering staff and operators, together with the safety officer or advisor to ensure that they are accurate and provide practical instructions regarding how to carry out duties safely.

Operating procedures should include specific instructions as to what steps are to be taken or followed in carrying out the stated procedures. Operating instructions for each procedure should include the applicable safety precautions and contain appropriate information on safety implications. Computerised process control systems would add complexity to operating instructions. These operating instructions should describe the logic of the software as well as the relationship between the equipment and the control system. All control room personnel (if any) and operating staff should have a full understanding of operating procedures which are also called standard operating practices for operations. Operating procedures should be reviewed when there is a change in the process or

when there are other changes that make the previous job hazard analysis invalid. The consequences of operating procedure changes should be fully evaluated and the information conveyed to the relevant personnel.

5.13.4 Training and competency of workers

The proprietor or contractor should ensure that all workers fully understand the safety and health hazards of the processes they work with for the protection of both themselves and their fellow workers. Also, additional training in subjects such as operating procedures and safe work practices, emergency evacuation and response, safety procedures and other subjects pertinent to process safety and health should be included in the training programme.

Hands-on training where workers are able to use their senses beyond merely listening will enhance learning and should be provided. Other training techniques using videos or on-the-job training should also be considered. The proprietor or contractor of the relevant industrial undertaking should periodically evaluate the training programme to see if the necessary skills and knowledge are being properly applied by their trained workers. In addition, the proprietor or contractor should ensure that workers, including sub-contractor's workers (if any), have received current and updated training.

5.13.5 Mechanical integrity programme

The proprietor or contractor of a relevant industrial undertaking should review their maintenance programmes and schedules to see if there are areas where "breakdown" maintenance (or corrective maintenance) is used rather than an on-going mechanical integrity programme. Plant and equipment used should be designed, constructed, installed and maintained in such way as to minimise the risk at work. A mechanical integrity programme should be in place to ensure the continued integrity of process plant and equipment. The elements of a mechanical integrity programme should include the identification and categorisation of plant, equipment and instruments, inspections and tests, testing and inspection frequencies, development of maintenance procedures, training of maintenance personnel, establishment of criteria for acceptable test results, documentation of test and inspection results, and documentation of the manufacturer's specified mean-time-to-failure data.

5.14 A programme to protect workers from occupational health hazards

The nature of health risks can make the link between work activities and worker ill health less apparent than in the case of injury from an accident. Since health may be irreversibly damaged before the risk is apparent, it is essential to develop a preventive strategy to identify and control risks before anyone is exposed to them. Failure to do so can lead to workers' disability and loss of livelihood. It can also mean financial losses for the relevant industrial undertaking due to sickness absence, lost production, compensation and increased insurance premiums.

It is the duty of the proprietor or contractor of a relevant industrial undertaking to ensure the safety and health of their workers. The principles for protecting workers from occupational health hazards through controlling risks are the same as those for safety. A programme to protect workers from occupational health hazards therefore also consists of:-

- (a) identification of hazards;
- (b) determination of risk;
- (c) development of safety procedures and risk control measures;
- (d) implementation and maintenance of safety procedures and risk control measures; and
- (e) review of safety procedures and risk control measures,

as described in detail in Part 5.11.

The following paragraphs provide additional guidance which is of particular relevancy to the identification, evaluation and control of health hazards.

5.14.1 Identification of hazards

This is the essential first step. The objective is to find out whether there exists any health hazard in the workplace. Relevant sources of information include:

- (a) legislation and supporting codes of practice;
- (b) information and advice from suppliers of equipment, chemicals and other materials used at work;
- (c) international standards;
- (d) industry or trade association guidance;
- (e) the personal knowledge and experience of managers and workers;
- (f) accident, ill health and incident data;
- (g) expert advice and opinion; and
- (h) findings of research.

Besides, the hazard identification process should take into account the following-

- (1) Hazardous chemicals which
 - if inhaled can cause asthma, bronchitis or cancer;
 - if swallowed can cause poisoning; and
 - if spilt onto the skin or splashed into the eyes can cause dermatitis or severe irritation.
- (2) Improper manual handling, poorly designed workstations, repetitive movements, poor working postures etc. which can cause all kinds of musculo-skeletal disorders.
- (3) Noise which can lead to hearing loss.
- (4) Vibration which can lead to hand-arm vibration syndrome and 'white finger'.
- (5) Radiation which can cause problem ranging from eye and skin damage, ill-health (including cancer), to severe burns and even death.
- (6) Extremes of temperature, pressure and humidity which can affect people's ability to work safely and cause harmful changes within their bodies, such as heat stress and 'bends' (decompression sickness).

- (7) Stress which can affect all workers, not just managers. Stress is often behind a lot of sickness absences. It can contribute to coronary heart disease and illness caused by high blood pressure.

There should be a critical appraisal of all routine and non-routine business activities. In the simplest cases, hazards can be identified by observation and by reference to the relevant information [(a) to (h) above]. In more complex cases, measurements such as air sampling may be necessary to identify the presence of health hazards. The assistance of occupational hygienists, occupational physicians and occupational health nurses should be enlisted if necessary. In the most complex cases, special hazard analysis techniques such as hazard and operability studies and fault tree analysis should be used. Specialist advice is needed in choosing and applying the most appropriate method.

5.14.2 Determination of risk

The process of determination of risk helps to decide which health risk should be given priority. The aim is to identify the steps to be taken to control risk. The process should be done by competent persons.

A full description of the process is given in Part 5.11.4.

5.14.3 Development of safety procedures and risk control measures

When risks have been analyzed and assessed, decisions about the precautions against occupational health hazards can be made. All final decisions about safety procedures and risk control methods should take into account the relevant legal requirements which establish minimum standards for risk prevention or control.

The following is a summary of the safety procedures and risk control measures in descending order of priority:

- (1) Elimination of risks by substituting the hazardous substances or processes with non-hazardous or less hazardous ones.
- (2) Combat of risks at source by means of engineering controls. Examples are:
 - (a) to separate the operator from the risk of exposure to a known hazardous substance by enclosing the process; and

- (b) to design process machinery and work activities in such a way as to minimise the release of, or to contain, airborne hazards.
- (3) Minimisation of risk by means of:
 - (a) administrative control measures, such as a permit-to-work system; and
 - (b) personal protective equipment as a last resort.

Although, in complicated cases, specialist help may be needed to control risks to health, the proprietor or contractor can do a lot to prevent or control risks to health by taking straight-forward measures such as:

- (a) consulting the workforce about the design of workstations;
- (b) consulting the suppliers of substances, plant and equipment about minimising exposure;
- (c) enclosing machinery to cut down noise;
- (d) exploring the feasibility of using less hazardous materials; and
- (e) ensuring that workers are trained in the safe handling of all the substances and materials with which they may come into contact.

In devising the safety procedures and risk control measures, the involvement of affected workers is essential to ensure that the solutions are practical for those who have to implement them.

5.14.4 Implementing and maintaining safety procedures and risk control measures

Same as that described in Part 5.11.6.

5.14.5 Reviewing of safety procedures and risk control measures

Same as that described in Part 5.11.7

5.14.6 Health surveillance

The primary objective of health surveillance is to detect adverse health effects at an early stage, thereby enabling further harm to be prevented. In addition, the results of health surveillance can provide a means of:

- (a) checking the effectiveness of control measures;
- (b) providing feedback on the accuracy of the risk assessment; and
- (c) identifying and protecting individuals from increased risk.

The proprietor or contractor should arrange health surveillance and medical checks for workers, such as those working with carcinogenic substances, with asbestos, in compressed air, or underground in accordance with relevant legal requirements. If a worker is found to be suffering from an occupational disease, the proprietor or contractor should take steps to prevent him from further exposure to the substance or agent causing the disease by, for example, transferring him to another job in the industrial undertaking. He should review the health protection programme to identify the deficiencies and take measures to rectify them.

6. SAFETY AUDIT

Safety audit constitutes the "feedback loop" which enables the relevant industrial undertaking to reinforce, maintain and develop its ability to reduce risks to the fullest extent and to ensure the continued effectiveness of the safety management system. Under the Safety Management Regulation, the main duties of the proprietor or contractor of a relevant industrial undertaking specified in Parts 1 or 3 of Schedule 3 of the Safety Management Regulation in relation to safety audits include the following:

- appointment of a registered safety auditor to conduct safety audits [*Section 13 of the Safety Management Regulation*];
- provision of facilities, etc. for purpose of safety audits [*Section 14 of the Safety Management Regulation*]; and
- actions to be taken on safety audit reports submitted by a safety auditor [*Section 16 of the Safety Management Regulation*].

This part of the COP aims to provide practical guidance in respect of these legal requirements.

6.1 What is a "Safety Audit" ?

6.1.1 "safety audit" means an arrangement for -

- (a) collecting, assessing and verifying information on the efficiency, effectiveness and reliability of a safety management system (including the elements specified in Schedule 4 of the Safety Management Regulation contained in the system); and
- (b) considering improvements to the system.

[*Section 2(1) of the Safety Management Regulation*]

6.1.2 Collection of information on the safety management system

(1) Interviewing individuals

Individuals should be interviewed to gather information about the operation of the safety management system and the perceptions, knowledge, understanding, management practices, skills and competence of managers and employees at various levels in the organisation.

In general, key personnel in the relevant industrial undertaking to be audited, as well as its sub-contractors, should provide the safety auditor with relevant information. Questionnaires can be used to ensure that interviews are carried out in a structured manner and that all the information required is obtained efficiently with minimum inconvenience to the parties involved. Key personnel usually include the proprietor or contractor, directors, managers, safety officers/safety advisors, permit-to-work controllers, and experienced employees. Other representative personnel at all levels should also be interviewed to establish whether or not procedures are understood and followed.

(2) *Examining documents*

Documents should be examined to check and assess the industrial undertaking's risk control systems, performance standards, safety procedures and safety instructions and to verify the information obtained through interviews.

The documents to be examined should include:

- the safety policy, complete with the general policy statement and a description of the supporting safety organisation and safety arrangements;
- risk assessment reports;
- previous safety audit records;
- documents setting out the safety and health risk control arrangements;
- safety committee/safety group meeting minutes;
- safety inspection reports;
- accident, incident and ill-health reports and statistics;
- occupational hygiene records (for example, personal monitoring records);
- reports by the enforcing authorities;
- safety training records;
- in-house safety rules and regulations and records of their compliance;

- the agreements with sub-contractors (if applicable);
- records of safety promotion programmes;
- statutory registers, forms and certificates;
- records of safety and health suggestions; and
- emergency procedures.

(3) *Visual observations*

The purposes of visual observation of physical conditions and work activities are to examine compliance with legal requirements, to verify the implementation and effectiveness of workplace safety procedures / precautions and risk control systems, and to confirm the information gathered through interviews and examination of documents. There are various types of observation ranging from simple visual observation of work and behaviour to very thorough visual checking of premises, plant and equipment. It can cover the whole of a particular operation or activity or focus on some sampled parts.

Collection of information about the safety management system requires decisions on the level and detail of an audit. Most audits involve sampling and a key question is always "How much sampling needs to be done to make a reliable assessment?". The nature and complexity of an audit should therefore vary according to its objectives and scope; the size, sophistication and complexity of the relevant industrial undertaking; and the maturity of the existing safety management system.

The information so collected in a safety audit should be able to provide a check on the adequacy and effectiveness of the safety management system in place. Therefore, the information concerned with answering the following questions should be collected:

- (a) Is the safety management system adequate, working well and without waste of resources ? (i.e. is it doing the right things ?)
- (b) Is the safety management system working as intended and to the desired effect ? (i.e. is it doing things right ?)
- (c) Can the safety management system be relied upon ? (i.e. can it ensure that all requirements regarding safety and health are complied with consistently and can it secure continued effective operation?)

6.1.3 Assessment and verification of information on the safety management system

- (1) The adequacy of a safety management system should be assessed by making a comparison between what is found against a relevant "standard" or benchmark (i.e. the audit criteria). Legal standards, codes of practice, guidance notes, applicable industry standards and international standards should be used to make audit judgments.
- (2) Sufficient evidence should be collected to verify whether the relevant industrial undertaking's safety management system conforms with the audit criteria. Evidence is typically secured through interviews, examination of documents, and visual observation of activities and conditions. Indications of non-conformity with the audit criteria should be recorded.
- (3) Evidence can be in the form of qualitative or quantitative data. The use of correctly designed audit aids such as checklists and questionnaires, etc. can help simplify the analysis of data. In some cases, it would be helpful to score audit findings so that changes in performance can be measured from one audit to the next. Where such an approach is adopted, it should be based on auditing methods that ensure consistency in scoring.
- (4) The value of a safety audit is dependent upon (a) the experience and knowledge of the safety auditor and his ability to interpret and use the audit findings; and (b) the implementation of the recommendations of the safety audit report. It is also dependent upon the integrity of all the parties involved. Therefore, checks should be built into the system to help avoid misrepresentation or misapplication of safety audit results.
- (5) The safety auditor should review all his audit evidence to determine where the safety management system does not conform to the audit criteria. He should then ensure that the findings of non-conformity are supported by audit evidence and properly documented. Lastly, the safety auditor should discuss his findings with the manager in question to counter-check the factual basis of these findings. If objection is raised by the manager, the findings should be clarified before they are presented to the proprietor or contractor of the relevant industrial undertaking.

6.1.4 Consideration of improvements to the safety management system

- (1) Based on the audit findings, the overall performance of the safety management system should be assessed. If inadequacies or non-conformities are identified, recommendations should be made to improve the system. The audit should also identify the strengths and suggest how to build on them.
- (2) A plan based on the audit findings for improving the safety management system should be developed and drawn up. This plan should contain the necessary remedial measures and actions to rectify the inadequacies and non-conformities, complete with a description of responsibilities, completion dates and reporting requirements. Follow-up monitoring arrangements should be established to ensure the satisfactory implementation of the plan.

6.2 The appointment of a registered safety auditor to conduct a safety audit

- 6.2.1 (1) A proprietor or contractor specified in Part 1 or Part 3 of Schedule 3 of the Safety Management Regulation shall appoint a registered safety auditor to conduct a safety audit in relation to the relevant industrial undertaking. *[Section 13(1) of the Safety Management Regulation]*
- (2) *Who is a registered safety auditor ?*
- (a) For a person to be registered as a safety auditor, he should satisfy the requirements of Schedule 1 in the Safety Management Regulation. *[Section 4(1) of the Safety Management Regulation]*

The person shall -

- (a) be a registered safety officer under the Factories and Industrial Undertakings (Safety Officers and Safety Supervisors) Regulations (Cap.59 sub. leg.);
- (b) have not less than 3 years' full-time experience, in the 5 years period immediately preceding the application concerned under section 5 of this Regulation, in a managerial post responsible for industrial safety and health matters in respect of an industrial undertaking;
- (c) occupy, at the time of the application concerned under section 5 of this Regulation, the managerial post referred to in paragraph (b), or a like post;
- (d) have successfully completed -
 - (i) a scheme conducted by a registered scheme operator; or
 - (ii) before the commencement of this Schedule, a scheme recognized by the Commissioner for the purposes of this Schedule; and
- (e) understand the requirements under legislation in Hong Kong relating to industrial safety and health matters.

- (b) The person should apply to the Commissioner for registration *[Section 5 of the Safety Management Regulation]*. If the Commissioner considers that the person is eligible, competent, fit and proper to be registered, he will be registered as a safety auditor *[Section 6(2) of the Safety Management Regulation]* and the particulars of his name and address, etc. will be kept in a register maintained by the Commissioner *[Section 3(1)(a) of the Safety Management Regulation]*.

(3) *How should the proprietor or contractor choose a safety auditor ?*

- (a) The proprietor or contractor should go to such offices of the Government as the Commissioner may direct to inspect the register, free of charge, during office hours [Sections 3(1) and 3(2) of the Safety Management Regulation]. He should only appoint a registered safety auditor whose name appears in the register and whose registration is not for the time being suspended under this Regulation. He can inspect the register kept by the Commissioner to check whether or not the registered safety auditor is suspended under the Safety Management Regulation and the period of time that registration is suspended [Section 3(3)(b) of the Safety Management Regulation].
- (b) In choosing a safety auditor, the proprietor or contractor should consider the possible drawback of an internal safety auditor being over-familiar or over-satisfied with the relevant industrial undertaking's arrangements. Furthermore, he should adhere to the following basic criteria in choosing his safety auditor -
 - The auditor should understand his task and be competent to carry it out.
 - The auditor should be familiar with the industry and the processes being carried out in the relevant industrial undertaking.
 - The auditor should have a good knowledge of the safety management practices in the industry.
 - The auditor should have the necessary experience and knowledge to enable him to evaluate performance and identify deficiencies effectively.

(4) *How should the proprietor or contractor appoint a registered safety auditor ?*

The appointment of a registered safety auditor should preferably be done in writing by the proprietor or contractor so that there are documents to prove the appointment.

6.2.2 (1) The proprietor or contractor specified in Part 1 or Part 3 of Schedule 3 of the Safety Management Regulation is required to ensure that safety audits are conducted according to the frequency stated. *[Section 13(2) of the Safety Management Regulation]*

(2) *How frequent should safety audits be conducted in relevant industrial undertakings carrying out construction work?*

(a) For such a relevant industrial undertaking set up before the commencement of the Safety Management Regulation -

safety audits should be conducted not less than once in each 6 months period, beginning with the commencement of the Safety Management Regulation.

(b) For such a relevant industrial undertaking set up after the commencement of the Safety Management Regulation -

safety audits should be conducted not less than once in each 6 months period beginning with the day on which the undertaking comes into existence.

(c) In any case, safety audits should be conducted not less than 6 months after the last safety audit report was submitted under section 15 of the Safety Management Regulation in respect of the undertaking.

[Section 13(2)(a) of the Safety Management Regulation]

(3) *How frequent should safety audits be conducted in relevant industrial undertakings other than those carrying out construction work?*

(a) For such a relevant industrial undertaking set up before the commencement of the Safety Management Regulation -

safety audits should be conducted not less than once in each 12 months period, beginning with the commencement of the Safety Management Regulation.

(b) For such a relevant industrial undertaking set up after the commencement of the Safety Management Regulation -

safety audits should be conducted not less than once in each 12 months period beginning with the day on which the undertaking comes into existence.

- (c) In any case, safety audits should be conducted not later than 12 months after the last safety audit report was submitted under section 15 of the Safety Management Regulation in respect of the undertaking.

[Section 13(2)(b) of the Safety Management Regulation]

6.3 Assistance, facilities and information to be provided for the purposes of safety audit

6.3.1 The proprietor or contractor who has appointed a registered safety auditor to conduct a safety audit shall provide all such assistance, facilities and information as may be necessary for the audit. *[Section 14(a) of the Safety Management Regulation]*

6.3.2 (1) *What "assistance" should be provided ?*

- (a) Full co-operation with the safety auditor

The proprietor or contractor should ensure that staff at all levels in the relevant industrial undertaking are made aware of the objectives of a safety audit and its benefits so that they would not see the audit as a threat. All staff should be required to be open and co-operate wholeheartedly with the safety auditor by responding to any questions and request for information/data frankly and efficiently during the audit.

- (b) Determination of the scope of the safety audit

The scope of the audit should be determined by the proprietor or contractor in consultation with the safety auditor prior to the audit. The scope of the safety audit should describe the extent and boundaries of the audit in terms of physical locations, organisational activities and other parameters. All employees, including management staff, should be informed about the audit scope by the proprietor or contractor, who should ensure that the resources committed to the audit are sufficient to meet its intended scope.

(c) Assisting in the establishment of the audit criteria and audit plan

The proprietor or contractor should assist the safety auditor to work out the safety audit criteria. International standards, codes of practice, guidance notes, guidelines, legal requirements, and a host of other safety and health literatures, will be valuable sources of reference to help draw up the audit criteria.

In addition, the proprietor or contractor should take part in the drawing up of the safety audit plan so that he can fully understand the plan and communicate it to all staff members who will be affected by the audit. The proprietor or contractor should also take part in the review of the plan during the audit. The plan should include:

- the safety audit objectives and scope;
- the safety audit criteria;
- a description of the organisational and functional units to be audited;
- a description of the units and/or individuals in the relevant undertaking having significant direct responsibilities regarding safety management;
- the procedures for auditing the safety management system;
- the languages used in the safety audit;
- a description of reference documents;
- the expected time and duration for major safety audit activities;
- when and where the safety audit is to be conducted;
- the schedule of meetings to be held with the management;
- the confidentiality and privacy protection requirements;
- the contents, format and expected date of issue of the safety audit report; and
- document retention requirements.

Besides, the proprietor or contractor and the safety auditor should agree on the dates for commencement and completion of the safety audit, and the date by which the audit report is to be completed by the safety auditor.

(d) Authorisation and resources

The safety auditor should be authorised to enter workplaces, access confidential information, and inspect reports, records and statutory forms relating to safety and health during the audit. In addition, the safety auditor should be provided with adequate financial and human resources to ensure that he can carry out the audit in an effective and efficient way.

(e) Appointment of senior staff to accompany the safety audit

Responsible and competent senior staff should be appointed to accompany the safety auditor to the work sites and to ensure that the auditor is fully aware of the safety and health requirements enforced at the sites.

(2) *What "facilities" should be provided ?*

Provision of on-site facilities

The proprietor or contractor of the relevant industrial undertaking should provide the auditor with a suitable meeting place (such as an interview room) to conduct interviews with relevant working personnel on site, complete with desks and chairs. He should also provide the safety auditor with suitable personal protective equipment and the necessary secretarial support (such as photocopying and e-mail services). In addition, suitable testing and measuring equipment should be made readily available during the audit. Transportation for the auditor to go from one work location to another should also be arranged.

(3) *What "information" should be provided ?*

Documents relating to safety and health matters

The proprietor or contractor of the relevant industrial undertaking should co-operate fully with the safety auditor by tendering all the necessary documents for inspection and checking by the safety auditor. The documents should include the organisational chart, safety committee

meeting minutes, accidents and incidents investigation reports, production flow charts, work specifications and procedures, permit-to-work procedures, material safety data sheets, statutory forms and certificates, safety and health manuals, risk assessment reports, method statements, previous safety audit reports, and records showing that the work activities meet the safety and health standards.

6.4 Things to observe when the safety auditor is an employee of the proprietor or contractor

6.4.1 The proprietor or contractor who has appointed a registered safety auditor to conduct a safety audit shall ensure that the auditor, if he is an employee of the proprietor or contractor, as the case may be, is not required to carry out other work of a nature or to the extent that would prevent the efficacious conduct of the audit. *[Section 14(b) of the Safety Management Regulation]*

6.4.2 *What sort of work would prevent the efficacious conduct of the audit ?*

If the safety auditor is an employee of the relevant industrial undertaking, the proprietor or contractor should, as far as possible, only require him to carry out work relating to conducting the safety audit.

If it is not reasonably practicable to release the safety auditor from other duties during the audit, he should not be requested to take up duties of a nature that would prevent the efficacious conduct of the audit, including those likely to give rise to a conflict of interest and undermine his impartiality as an auditor. He should avoid duties that would overload him or cause undue interruptions to his work as a safety auditor. For example, if the safety auditor is an in-house safety officer or safety advisor, he should be released from the duties of a safety officer or safety advisor to avoid conflict of interest and maintain impartiality once he is appointed by the proprietor or contractor as the safety auditor.

6.5 Actions to be taken on safety audit report

6.5.1 The proprietor or contractor to whom a safety audit report has been submitted under section 15 of the Safety Management Regulation shall —

- (a) read and countersign the report, and record the date of his countersignature, as soon as practicable after receiving the report;
- (b) if the report contains recommendations for improvements to the safety management system to which it relates -
 - (i) draw up a plan for the improvements within 14 days after receiving the report; and
 - (ii) implement the plan as soon as is practicable;
- (c) if a plan referred to in paragraph (b) is drawn up, submit a copy of the report together with a copy of the plan to the Commissioner within 21 days after receiving the report; and
- (d) keep a copy of the report and the plan, if any, for a period of not less than 5 years after the date of countersignature referred to in paragraph (a).

[Section 16(1) of the Safety Management Regulation]

6.5.2 (1) *What should the proprietor or contractor do before countersigning the safety audit report ?*

Before countersigning the safety audit report, the proprietor or contractor, together with the managers affected by the findings of the report, should seriously consider the audit findings and the recommendations for improving the safety management system to see if they have any questions for immediate clarification with the safety auditor.

(2) *How should the plan for improvements be ?*

If the safety audit report contains recommendations for improving the safety management system, the proprietor or contractor should draw up a plan, in written form and complete with a description of the remedial measures, responsibilities, completion dates and reporting requirements, etc., for the implementation of the recommended improvements, within 14 days after receiving the report. In general, the plan should include the following essential components —

(a) Present situation

The present situation regarding the effectiveness, efficiency and reliability of the safety management system in operation in the relevant industrial undertaking should be defined as specifically as possible, based on the audit findings. This should be compared with the desired situation to find out how big the gap is.

(b) Desired situation

The desired situation regarding the effectiveness, efficiency and reliability of the safety management system should be defined as specifically as possible, based on the recommendations of the safety audit report. It will provide the standards for the industrial undertaking's safety management system to measure up to.

(c) Action plan

The action plan deals with how to move from the present situation to the desired situation. It should be specific enough to be measurable and should answer the questions of "what", "who" and "when" in the process of upgrading the safety management system. Monitoring arrangements should be laid down in the plan to ensure its effective and efficient implementation.

(3) *How soon should the proprietor or contractor implement the improvement plan?*

The proprietor or contractor shall as soon as is practicable implement the plan drawn up to rectify the shortcomings that exist in the safety management system. He should, in consultation with the safety auditor, work out a priority list of actions so that situations with imminent risks are dealt with immediately and non-imminent situations are dealt with as soon as possible.

In any case, the proprietor or contractor shall submit a copy of the safety audit report together with a copy of the plan to the Commissioner within 21 days after receiving the report. The proprietor or contractor shall also keep a copy of the report and the plan, if any, for not less than 5 years after the date of his countersignature. Follow-up monitoring arrangements should be established by the proprietor or contractor to ensure satisfactory implementation of the plan for improving the efficiency, effectiveness and reliability of the safety management system.

6.6 Obligation to produce safety audit report or plan for inspection

6.6.1 The proprietor or contractor shall at all reasonable times make available the safety audit report or plan for inspection by any occupational safety officer who requests to see it. *[Section 17(a) of the Safety Management Regulation]*

6.6.2 The proprietor or contractor shall provide a copy of the report or plan, and/or any document which supports any matter specified or referred to in the report or plan not later than 14 days after receiving a written request from the Commissioner to do so. *[Sections 17(c) and (d) of the Safety Management Regulation]*

6.6.3 *What are the documents which support the matter specified or referred to in the safety audit report or plan?*

Such documents include records or other documents which:

- (a) provide evidence on the development, implementation and maintenance of the safety management system; and
- (b) have been used by the safety auditor to support his audit findings and recommendations. Some examples of such documents are listed in Part 6.1.2(2) for reference.

6.6.4 A proprietor or contractor shall permit an occupational safety officer to make a copy of the safety audit report or plan he requests to see. *[Section 17(b) of the Safety Management Regulation]*

7. SAFETY REVIEW

Safety review constitutes the "feedback loop" which enables the relevant industrial undertaking to reinforce, maintain and develop its ability to reduce risks to the fullest extent and to ensure the continued effectiveness of the safety management system. Under the Safety Management Regulation, the main duties of the proprietor or contractor of a relevant industrial undertaking specified in Part 2 or 4 of Schedule 3 in relation to safety reviews include the following:

- appointment of a safety review officer to conduct safety reviews [*Section 19 of the Safety Management Regulation*];
- provision of facilities, etc. for purpose of safety reviews [*Section 20 of the Safety Management Regulation*]; and
- action to be taken on safety review reports submitted by a safety review officer [*Section 22 of the Safety Management Regulation*].

This part of the COP aims to provide practical guidance in respect of these legal requirements.

7.1 What is a "Safety Review"?

7.1.1 "safety review" means an arrangement for -

- (a) reviewing the effectiveness of a safety management system (including the elements specified in Schedule 4 of the Safety Management Regulation contained in the system); and
- (b) considering improvements to the effectiveness of the system.

[*Section 2(1) of the Safety Management Regulation*]

7.1.2 Review of the safety management system

(1) Document review

Safety and health instructions are an integral part of normal procedures and working instructions. Therefore, relevant documents should be reviewed as part of the safety review. In general, documents to be reviewed and assessed should be those which

provide evidence on the implementation and maintenance of the safety management system, including:

- the safety policy, complete with the general policy statement and a description of the supporting safety organisation and safety arrangements;
- risk assessment reports;
- previous safety review records;
- safety and health manuals, setting out the safety and health risk control arrangements;
- safety group meeting minutes;
- safety inspection reports;
- accident, incident and ill-health reports and statistics;
- occupational hygiene records (for example, personal monitoring records);
- reports by the enforcing authorities;
- safety training records;
- in-house safety rules and regulations and records of their compliance;
- the agreements with sub-contractors (if applicable);
- records of safety promotion programmes;
- statutory registers, forms and certificates;
- records of safety and health suggestions; and
- emergency procedures.

(2) *Physical condition check*

Physical check of premises, plant and equipment, supplemented by visual observation of work and behaviour by the safety review officer, should be conducted during the safety review. The purposes are to check compliance with legal requirements and to verify the effectiveness of workplace safety procedures / precautions and risk control systems. The physical condition check may either cover the whole of a particular operation or activity or focus on only the sampled parts.

During the physical condition check, the proprietor or contractor of the relevant industrial undertaking or his representative, the person responsible for safety matters and the experienced employees involved in the particular operation or activity to be reviewed, should be asked to provide information to counter-check the validity of the observation findings.

Finally, the physical condition check findings so collected should be used to verify the information gathered through examining documents.

- (3) The safety review should answer the questions "where are we now ?" and "how well or badly are we performing?". It should be a review of the existing arrangements for managing safety and health in the relevant industrial undertaking and an appraisal of the performance of the safety management system in operation. During the safety review, information should be obtained on the scope, adequacy and implementation and maintenance of the current safety management system. Also, the review should provide a reference for the next safety review on the progress of the implementation and maintenance of the safety management system. In general, the safety review should compare the existing safety management system with:
- (a) the requirements of the Safety Management Regulation on the development, implementation and maintenance of a safety management system;

- (b) the standards stipulated in the relevant codes of practice and guidance notes; and
 - (c) the industry standards and international standards applicable to the operation of a safety management system.
- (4) A conclusion should be drawn as to whether or not the relevant industrial undertaking's safety management system conforms to the requirements and standards as laid down in (3) above, based on the findings of the physical condition check and document review.
- (5) The safety review officer should ensure that the findings of non-conformity are properly documented and supported by review evidence. Lastly, the safety review officer should discuss his findings with the manager or supervisor in question to verify the factual basis of his findings. If objection is raised by the manager or supervisor, the matters should be clarified before the review findings are presented to the proprietor or contractor of the relevant industrial undertaking.

7.1.3 Consideration of improvements to the safety management system

- (1) Based on the review findings, the overall performance of the safety management system should be assessed. If inadequacies or non-conformities are identified, recommendations should be made to improve the system. The review should also identify the strengths and suggest how to build on them.
- (2) A plan based on the review findings for improving the safety management system should be developed and drawn up. This plan should contain the necessary remedial measures and actions to rectify the inadequacies and non-conformities, complete with a description of responsibilities, completion dates and reporting requirements. Follow-up monitoring arrangements should be established to ensure the satisfactory implementation of the plan.

7.2 The appointment of a safety review officer to conduct a safety review

7.2.1 (1) A proprietor or contractor specified in Part 2 or 4 of Schedule 3 of the Safety Management Regulation shall —

- (a) appoint, in the approved form, a person (who may be an employee of the proprietor or contractor), being a person who is capable of competently carrying out a safety review, to be the safety review officer to conduct a safety review in relation to the relevant industrial undertaking; and
- (b) cause a copy of the appointment to be displayed -
 - (i) in a conspicuous position at each place where the undertaking is carried on; and
 - (ii) as soon as practicable after making the appointment.

[Section 19(1) of the Safety Management Regulation]

(2) *Who is a safety review officer ?*

A safety review officer can be an employee of the relevant industrial undertaking to be reviewed or an outsider who is not an employee of the relevant industrial undertaking. He shall be a person who is capable of competently carrying out a safety review. For a person to be considered as competent in carrying out a safety review, he should have a good understanding of (a) the operation of the relevant industrial undertaking in respect of which he conducts the safety review; and (b) the legal requirements in force in Hong Kong relating to industrial safety and health, and should have received appropriate training in how to review the effectiveness of a safety management system with a view to improving it. As an example, a person who has successfully completed a safety auditor training course conducted by a registered scheme operator will be considered as having received such training.

(3) *How should the proprietor or contractor choose a safety review officer ?*

In choosing a safety review officer, the general factors that should be considered by the proprietor or contractor include the availability of the safety review officer for the length of time necessary to undertake the safety review; the availability of a safety review officer with the necessary skills; the safety review experience required; the specialist knowledge or technical expertise required; and the danger of an internal safety review officer being over-familiar or over-satisfied with the relevant industrial undertaking's arrangements.

(4) *How to appoint a safety review officer ?*

The proprietor or contractor should appoint a safety review officer in writing, using an approved form. This approved form is specified by the Commissioner for this purpose. *[Section 36(1) of the Safety Management Regulation]*

7.2.2 (1) The proprietor or contractor specified in Part 2 or Part 4 of Schedule 3 of the Safety Management Regulation shall ensure that safety reviews are conducted according to the frequency stated. *[Section 19(2) of the Safety Management Regulation]*

(2) *How frequent should safety reviews be conducted in relevant industrial undertakings carrying out construction work?*

(a) For such a relevant industrial undertaking set up before the commencement of the Safety Management Regulation -

safety reviews should be conducted not less than once in each 6 months period, beginning with the commencement of the Safety Management Regulation.

(b) For such a relevant industrial undertaking set up after the commencement of the Safety Management Regulation -

safety reviews should be conducted not less than once in each 6 months period beginning with the day on which the undertaking comes into existence.

- (c) In any case, safety reviews should be conducted not less than 6 months after the last safety review report was submitted under section 21 of the Safety Management Regulation in respect of the undertaking.

[Section 19(2)(a) of the Safety Management Regulation]

- (3) *How frequent should safety reviews be conducted in relevant industrial undertakings other than those carrying out construction work?*

- (a) For such a relevant industrial undertaking set up before the commencement of the Safety Management Regulation -

safety reviews should be conducted not less than once in each 12 months period, beginning with the commencement of the Safety Management Regulation.

- (b) For such a relevant industrial undertaking set up after the commencement of the Safety Management Regulation -

safety reviews should be conducted not less than once in each 12 months period beginning with the day on which the undertaking comes into existence.

- (c) In any case, safety reviews should be conducted not later than 12 months after the last safety reviews report was submitted under section 21 of the Safety Management Regulation in respect of the undertaking.

[Section 19(2)(b) of the Safety Management Regulation].

7.3 Assistance, facilities and information to be provided for the purposes of safety review

7.3.1 The proprietor or contractor who has appointed a safety review officer to conduct a safety review shall provide all such assistance, facilities and information as may be necessary for the review [*Section 20(a) of the Safety Management Regulation*].

7.3.2 (1) *What "assistance" shall be provided ?*

(a) Full co-operation with the safety review officer

The proprietor or contractor should ensure that staff at all levels in the relevant industrial undertaking are made aware of the objectives of a safety review and its benefits so that they would not see the safety review as a threat. All staff should be required to be open and co-operate wholeheartedly with the safety review officer by responding to any questions and request for information/data frankly and efficiently during the safety review.

(b) Determination of the scope of the safety review

The scope of the safety review should be determined by the proprietor or contractor in consultation with the safety review officer prior to the safety review. The scope of the safety review should describe the extent and boundaries of the safety review in terms of physical locations, organisational activities and other parameters. All employees, including management staff, should be informed about the safety review scope by the proprietor or contractor, who should ensure that the resources committed to the safety review are sufficient to meet its intended scope.

(c) Assisting in the establishment of the review criteria and review plan

The proprietor or contractor should assist the safety review officer to work out the safety review criteria. International standards, codes of practice, guidance notes, guidelines, legal requirements, and a host of other safety and health literatures, will be valuable sources of reference to help draw up the safety review criteria.

In addition, the proprietor or contractor should take part in the drawing up of the safety review plan so that he can fully understand the plan and communicate it to all staff members who will be affected by the safety review. The proprietor or contractor should also take part in the review of the plan during the safety review. The plan should include:

- the safety review objectives and scope;
- the safety review criteria;
- a description of the organisational and functional units to be reviewed;
- a description of the units and/or individuals in the relevant undertaking having significant direct responsibilities regarding safety management;
- the procedures for reviewing the safety management system;
- the languages used in the safety review;
- a description of reference documents;
- the expected time and duration for major safety review activities;
- when and where the safety review is to be conducted;
- the schedule of meetings to be held with the management;
- the confidentiality and privacy protection requirements;
- the contents, format and expected date of issue of the safety review report; and
- document retention requirements.

Besides, the proprietor or contractor and the safety review officer should agree on the dates for commencement and completion of the safety review, and the date by which the review report is to be completed by the safety review officer.

(d) Authorisation and resources

The safety review officer should be authorised to enter workplaces, access confidential information, and inspect reports, records and statutory forms relating to safety and health during the safety review. In addition, the safety review officer should be provided with adequate financial and human resources to ensure that he can carry out the safety review in an effective and efficient way.

(2) *What "facilities" shall be provided ?*

Provision of on-site facilities

The proprietor or contractor of the relevant industrial undertaking should provide the safety review officer with a suitable meeting place (such as an interview room) to conduct interviews with relevant working personnel on site, complete with desks and chairs. He should also provide the safety review officer with suitable personal protective equipment and the necessary secretarial support (such as photocopying and e-mail services). In addition, suitable testing and measuring equipment should be made readily available during the safety review. Transportation for the safety review officer to go from one work location to another should also be arranged.

(3) *What "information" shall be provided ?*

Documents relating to safety and health matters

The proprietor or contractor of the relevant industrial undertaking should co-operate fully with the safety review officer by tendering all the necessary documents for inspection and checking by the safety review officer. The documents should include the organisational chart, safety committee meeting minutes, accidents and incidents investigation reports, production flow charts, work specifications and procedures, permit-to-work procedures, material safety data sheets, statutory forms and certificates, safety and health manuals, risk assessment reports, method statements, previous safety review reports, and records showing that the work activities meet the safety and health standards.

7.4 Things to observe when the safety review officer is an employee of the proprietor or contractor

7.4.1 The proprietor or contractor who has appointed a safety review officer to conduct a safety review shall ensure that the officer, if he is an employee of the proprietor or contractor, as the case may be, is not required to carry out other work of a nature or to the extent that would prevent the efficacious conduct of the review. *[Section 20(b) of the Safety Management Regulation]*

7.4.2 *What sort of work would prevent the efficacious conduct of the review ?*

If the safety review officer is an employee of the relevant industrial undertaking, the proprietor or contractor should, as far as possible, only require him to carry out work relating to conducting the safety review.

If it is not reasonably practicable to release the safety review officer from other duties during the safety review, he should not be requested to take up duties of a nature that would prevent the efficacious conduct of the safety review, including those likely to give rise to a conflict of interest and undermine his impartiality as a safety review officer. He should avoid duties that would overload him or cause undue interruptions to his work as a safety review officer. For example, if the safety review officer is an in-house safety officer or safety advisor, he should be released from the duties of a safety officer or safety advisor to avoid conflict of interest and maintain impartiality once he is appointed by the proprietor or contractor as the safety review officer.

7.5 Action to be taken on safety review report

7.5.1 The proprietor or contractor to whom a safety review report has been submitted under section 21 of the Safety Management Regulation shall —

- (a) read and countersign the report, and record the date of his countersignature, as soon as practicable after receiving the report;
- (b) if the report contains recommendations for improvements to the safety management system to which it relates -
 - (i) draw up a plan for the improvements within 14 days after receiving the report; and
 - (ii) implement the plan as soon as is practicable;
- (c) if a plan referred to in paragraph (b) is drawn up, submit a copy of the report together with a copy of the plan to the Commissioner within 21 days after receiving the report; and
- (d) keep a copy of the report and the plan, if any, for a period of not less than 5 years after the date of countersignature referred to in paragraph (a).

[Section 22(1) of the Safety Management Regulation]

7.5.2 (1) *What should the proprietor or contractor do before countersigning the safety review report ?*

Before countersigning the safety review report, the proprietor or contractor, together with the managers affected by the findings of the report, should seriously consider the safety review findings and the recommendations for improving the safety management system to see if they have any questions for immediate clarification with the safety review officer.

(2) *How should the plan for improvements be ?*

If the safety review report contains recommendations for improving the safety management system, the proprietor or contractor should draw up a plan, in written form and complete with a description of the remedial measures, responsibilities, completion dates and reporting requirements, etc., for the implementation of the recommended improvements, within 14 days after receiving the report. In general, the plan should include the following essential components —

(a) Present situation

The present situation regarding the effectiveness of the safety management system in operation in the relevant industrial undertaking should be defined as specifically as possible, based on the safety review findings. This should be compared with the desired situation to find out how big the gap is.

(b) Desired situation

The desired situation regarding the effectiveness of the safety management system should be defined as specifically as possible, based on the recommendations of the safety review report. It will provide the standards for the industrial undertaking's safety management system to measure up to.

(c) Action plan

The action plan deals with how to move from the present situation to the desired situation. It should be specific enough to be measurable and should answer the questions of "what", "who" and "when" in the process of upgrading the safety management system. Monitoring arrangements should be laid down in the plan to ensure its effective and efficient implementation.

(3) *How soon should the proprietor or contractor implement the improvement plan?*

The proprietor or contractor shall as soon as is practicable implement the plan drawn up to rectify the shortcomings that exist in the safety management system. He should, in consultation with the safety review officer, work out a priority list of actions so that situations with imminent risks are dealt with immediately and non-imminent situations are dealt with as soon as possible.

In any case, the proprietor or contractor shall submit a copy of the safety review report together with a copy of the plan to the Commissioner within 21 days after receiving the report. The proprietor or contractor shall also keep a copy of the report and the plan, if any, for not less than 5 years after the date of his countersignature. Follow-up monitoring arrangements should be established by the proprietor or contractor to ensure satisfactory implementation of the plan for improving the effectiveness of the safety management system.

7.6 Obligation to produce safety review report or plan for inspection

7.6.1 The proprietor or contractor shall at all reasonable times make available the safety review report or plan for inspection by any occupational safety officer who requests to see it. *[Section 23(a) of the Safety Management Regulation]*

7.6.2 The proprietor or contractor shall provide a copy of the report or plan, and/or any document which supports any matter specified or referred to in the report or plan not later than 14 days after receiving a written request from the Commissioner to do so. *[Sections 23(c) and (d) of the Safety Management Regulation]*

7.6.3 *What is the document which supports the matter specified or referred to in the safety review report or plan?*

Such documents include records or other documents which:

- (a) provide evidence on the development, implementation and maintenance of the safety management system; and
- (b) have been used by the safety review officer to support his safety review findings and recommendations. Some examples of such documentation are listed out in Part 7.1.2(2) for reference.

7.6.4 A proprietor or contractor shall permit an occupational safety officer to make a copy of the safety review report or plan he requests to see. *[Section 23(b) of the Safety Management Regulation]*

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USEFUL INFORMATION

If you wish to enquire about this Code of Practice or require advice on occupational safety and health, you can contact the Occupational Safety and Health Branch through :

Telephone : 2559 2297 (auto-recording after office hour)

Fax : 2915 1410

E-mail : laboureq@labour.gcn.gov.hk

Information on the services offered by the Labour Department and on major labour legislation can also be found by visiting our Home Page on the Internet. Address of our Home Page is <http://www.info.gov.hk/labour>.



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